Foreword





NOAA Fisheries Service Northeast Cooperative Research Partners Program

The National Marine Fisheries Service (NOAA Fisheries Service), Northeast Cooperative Research Partners Program (NCRPP) was initiated in 1999. The goals of this program are to enhance the data upon which fishery management decisions are made as well as to improve communication and collaboration among commercial fishery participants, scientists and fishery managers. NOAA Fisheries Service works in close collaboration with the New England Fishery Management Council's Research Steering Committee to set research priorities to meet management information needs.

Fishery management is, by nature, a multiple year endeavor which requires a time series of fishery dependent and independent information. Additionally, there are needs for immediate short-term biological, oceanographic, social, economic and habitat information to help resolve fishery management issues. Thus, the program established two avenues to pursue cooperative research through longer and short-term projects. First, short-term research projects are funded annually through competitive contracts. Second, three longer-term collaborative research projects were developed. These projects include: 1) a pilot study fleet (fishery dependent data); 2) a pilot industry based survey (fishery independent data); and 3) groundfish tagging (stock structure, movements and mixing, and biological data).

First, a number of short-term research projects have been developed to work primarily on commercial fishing gear modifications, improve selectivity of catch on directed species, reduce bycatch, and study habitat reactions to mobile and fixed fishing gear.

Second, two cooperative research fleets have been established to collect detailed fishery dependent and independent information from commercial fishing vessels. The original concept, developed by the Canadians, referred to these as "sentinel fleets". In the New England groundfish setting it is more appropriate to consider two industry research fleets. A pilot industry-based survey fleet (fishery independent) and a pilot commercial study fleet (fishery dependent) have been developed.

Additionally, extensive tagging programs are being conducted on a number of groundfish species to collect information on migrations and movements of fish, identify localized or subregional stocks, and collect biological and demographic information on these species.

For further information on the Cooperative Research Partners Programs please contact:

National Marine Fisheries Service (NOAA Fisheries Service) Northeast Cooperative Research Partners Program

(978) 281-9276 – Northeast Regional Office of Cooperative Research (401) 782-3323 – Northeast Fisheries Science Center, Cooperative Research Office, Narragansett Laboratory

www.nero.noaa.gov/StateFedOff/coopresearch/

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Final Report: Developing a raised footrope whiting net in the Gulf of Maine that meets conservation goals for size selectivity and bycatch.

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Developing a raised footrope whiting net in the Gulf of Maine that meets conservation goals for size selectivity and bycatch.

1. Project Summary and Statement of Research Question:

1. Project Summary

The work done under the current NMFS grant built on the successes in 1999 and essentially completed development of a net that better targets whiting by meeting the double criteria of conservation of the whiting resource and minimization of bycatch of regulated species. Through a series of tests of cod end mesh, raised footrope configurations with and without a roller frame, taking the configuration with the least bycatch from each test, the current research developed a net that met the criteria. This net is a raised footrope sweepless trawl with dropper chains that has a 50 mm bar space Nordmore style grate and 2-1/2 inch stretched mesh cod end. Whiting length frequency retained with this net shows few whiting retained below 22 cm, or roughly size at first maturity. The percentage of bycatch of regulated species is less than 5% for all but a few tows. Continued work during the summer and fall of 2002 with the fishermen involved ensured that proper design and rigging instructions could be developed that would be easily followed, fished and enforced. Sixteen tows with 2-1/2 inch cod end mesh paired with tows with 3 inch cod end mesh conducted during the fall of 2002 showed little difference in length frequency of whiting or in bycatch of regulated species between the two cod ends.

With the completion of this gear development work, Maine worked with the New England Fishery Management Council's Whiting Monitoring Committee on a framework adjustment to create this fishery. This framework adjustment, FW 38, is very specific as to what types of gear may be used in the fishery, ie a raised footrope net with a 50 mm bar space grate and a 2-1/2 inch diamond mesh cod end and defines an area where and a specific time period when the fishery can occur (See Appendix I).

There was a very large whiting fishery along the coast during the 1960's and early 70's and a reasonable fishery during the 1980's, there were little landings during the late 1980's and early 1990's. In 1994, an innovation that helped reduce finfish bycatch in the shrimp fishery, the Nordmore grate, was modified to allow a slightly larger size whiting through the grate, yet keep the bycatch of regulated species down below 5%. The grate bar spacing was widened to 40 mm from 25 mm and testing at sea showed good success at catching whiting and keeping by catch low. There was no whiting management plan in place at that time and the size fish targeted by this gear, 1 3/4" mesh net and 40 mm bar space grate, was salable in the Spanish whiting market if properly handled on deck to preserve quality. This fishery existed as an experimental fishery under NMFS regulation under the proviso that it proves that its bycatch is less than 5%. Data between sea sampling and logbooks differed as to bycatch percentage. As this work progressed, Amendment 12 to the Northeast Multispecies Fishery Management Plan (MSFMP) was approved in 1999, creating a management plan for the whiting fishery. This plan limited the whiting fishery to only two locations in the Gulf of Maine, Area 1 off Cape Ann, Massachusetts, and Area 2 outside Jeffrey's Ledge. Neither is accessible to the inshore Maine whiting fleet. Submitted in May, 2000, Framework Adjustment 35 to the Northeast MSFMP has allowed an additional whiting fishery north of Cape Cod through use of a raised footrope net. This area has recently been expanded, but is also inaccessible to the Maine fleet. Thus the traditional Maine whiting fishery has been systematically regulated out of existence.

Understandably, after several years of issuing experimental fishing permits for the Maine fishery to prove its worth, the NMFS in 2000 was reluctant to continue to issue experimental fishery permits to sustain the Maine fishery with the whiting grate. Maine fishers hoped that a whiting fishery closer to Maine could be created through another framework adjustment to reestablish this traditional fishery. In order to do so in good conscience, Maine fishers wanted to use the best possible combination of attributes in the net that would meet the dual criteria of low bycatch and conservative size selection for whiting. Amendment 12 to the MSFMP had established a series of increasing limits on daily catch based on decreasing cod end mesh size, which was aimed at limiting the mortality of pre spawning fish.

With a grant from the Maine Fishing Industry Development Program, we continued to work to bring the fishery into compliance with the intent of the whiting fishery management plan to reduce the fishing mortality on juvenile (pre-spawning) whiting. To these ends we investigated increased mesh sizes in the cod end, the addition of a Nordmore style grate into the extension with varying bar spacings and the addition of a modified Massachusetts-style raised footrope to the trawl. Our work met with good success in reducing the catch of small whiting and the bycatch of regulated species. The bycatch of regulated species is calculated as the ratio of the weight of regulated species and the total weight of fish caught. Thus when you greatly reduce the total weight of fish caught by

increasing the cod end mesh to release the small whiting, you run the risk of increasing the percent of bycatch of regulated species, even if you have effectively reduced their actual bycatch. This work ended with a series of trials with a raised footrope that was designed to reduce the bycatch of flatfish and thus bring the bycatch percentage back below 5%. The trials were promising, but not complete enough to be sufficient to recommend their use in the fishery. Also, the video footage that we felt was necessary to document what was happening with the gear while under tow was not clear enough. The current work has addressed these issues and cleared the way for the creation of a whiting fishery along the Maine coast through a framework adjustment (FW 38) to the MSFMP.

Study Design

The project goal for the CRPI grant was to complete the development of a whiting net that can be fished in the Gulf of Maine while successfully meeting the conservation needs of the whiting resource and maintaining acceptably low bycatch levels. The objectives towards this goal were: i. To obtain good video footage of the interaction between the gear and fish and the gear and the bottom. ii. To test 2-1/2" diamond mesh and 2-1/4" square mesh cod ends with a 50 mm bar space grate in combination with a raised footrope net configuration with 30 inch dropper chains both with and without a roller frame for whiting selectivity and bycatch reduction. iii. To sea trial the best combination with several fishers to generate feedback as to the gear's behavior under commercial conditions. iv. To gain acquaintance with and acceptance of the gear within the whiting fishing community.

The testing of the gear involved two vessels conducting paired tows of the test gear and a suitable control net. The catch for experimental and control tows was separated by species and each species weighed, counted and measured for length frequency. Adequate personnel, usually two individuals, were on board each vessel to separate and measure the catch. Comparisons of the diamond and square mesh cod ends were made based on catch and size frequency to determine their equivalence. The video work captured the fishing character of the gear and the behavior of the fish at the footrope of the net. The fishing characteristics of the net were videoed in shallow, clear water. The Scanmar net mensuration gear was unavailable for measuring the net opening width and height and height off the bottom.

Timetable	200	1											2002	!			2003	2005
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sep	Oct	Nov	Dec	Jan	Mar
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Gear ordering, constr.	*	*	*															
RFP Sea Sampling		*	*															
RFP Vessel Support			*	*														
Video, Scanmar use contr.				*														
Commercial trials sched.				*		*	*	*										
Raised footrope nets constr.							*											
Video, Scanmar net work							*											
Analysis of video							*	*										
Gear trials							*	*										
Sweepless trawl trials (ext.)													*	*	*	*	*	
3" Cod end trials (ext.)															*			
Analysis of trial results							*	*										
Commercial trials								*	*				*	*	*	*	*	
Data entry, analysis								*	*	*	*			*	*	*	*	
Final report										*	*	*				*	*	*
(ext.) = grant extension work																		

Results:

The results of the testing done during the fall of 1999 of the raised footrope trawl with 50 mm bar space grate and 2.6 inch diamond mesh cod end against a control net consisting of a footrope down on the roller frame, a 40 mm bar space grate and 1-3/4 inch diamond cod end were reviewed. See Appendix II for summary results on

catch, bycatch, percent bycatch of regulated species and catch and bycatch by species for the grate bar spacing and cod end mesh trials and the raised footrope trials with 42 inch and 30 inch dropper chains to a roller sweep, or no sweep. Based on those results, it was decided that the reduction in bycatch of regulated species was convincing enough that the current series of tests should concentrate on determining the difference in bycatch of regulated species created by the addition of the raised footrope. Thus the control net was redesigned as being the same as the test net with respect to the bar spacing in the grate and the cod end mesh, but with short dropper chains, bringing the footrope down on top of the roller frame. It was also decided that the video work should be done first to give us the assurance that the nets were properly deploying as designed.

The video documentation was done aboard the F/V Jerry & Joe III during July, 2001. Mike Pol and Arne Carr from Mass. DMF brought their U/W video camera up to Portland and over a period of 3 days were able to generate the footage needed to show that the raised footrope net with and without a roller frame was fishing correctly.

A tow schedule was prepared for the paired tow testing of the nets (See Diagram 1). Paired tows were conducted between September 15, 2001 and October 2, 2001 and tested two net configurations. A second, shorter set of paired tows was done between October 3 and 5, 2001 comparing 2.2" square mesh and 2.6" diamond mesh in the cod ends. A series of 71 tows conducted over 20 days of fishing between October 9 and November 27, 2001 provided commercial trials for the 30" raised footrope with no sweep, 50 mm grate and 2.6" diamond cod end configuration dubbed the 'bottom friendly net' as it has very little contact with the bottom. The two vessels that finally contracted to do the paired towing work were the F/V North Star and F/V Tenacious, Captains Vincent Balzano and Proctor Wells, respectively as the F/V Jerry & Joe sank at the dock and was unable to continue with the work. The F/V North Star was the only vessel to bid on conducting the commercial trials and so was awarded the entire 20 days for the commercial trials.

The paired tows were conducted in five sets. The first set compared the raised footrope trawl with 30 inch dropper chains and 10 inch diameter roller frame towed from the F/V North Star to a control net with no dropper chains and a 10 inch diameter roller frame towed from the F/V Tenacious. Both nets had a 50 mm bar space grate and 2.6 inch diamond cod end. There were 8 paired tows in this set and the per tow information for date, time, gear, location, depth, weight of catch, weight of regulated species bycatch and percent of regulated species bycatch are found in Table 1. This raw data showed the F/V North Star caught more total fish and less regulated species with the raised footrope net for a mean percent bycatch of 7.5% than did the F/V Tenacious with 14.9% with the control net. The length of tow between pairs was not always completely comparable, so the catch, bycatch and percent bycatch have been standardized to a per hour towing basis and are presented on both a per tow and a per trip basis (Table 2). In this initial set of tows, some tow information was not recorded, so per hour information is not complete. The percent bycatch showed some marginal improvement, with 18.3% for the control and 4.3% for the raised footrope net. Individual species catches in weight for the raised footrope with roller frame tows and the control net tows are summed in Table 3a and catch in numbers are summed in Table 3b for the raw data. Mean catch in wt per hour tow by species for the two nets is listed in Table 4. The majority of the catch in all tows was whiting and red hake. White hake, American plaice and gray sole comprised the bulk of the bycatch of regulated species. Selected species weights and numbers by paired tow for the raw data are compared for the two nets in Table 5. American plaice, gray sole and white hake were selected because they are the major bycatch species and they represent the two basic fish shapes, flat and round. Red hake and silver hake were chosen as they were the major components of the catch and monkfish was chosen as it is a commercially important bottom dweller that wouldn't fare well in cod end selectivity due to its shape and thus shouldn't be allowed to enter the net. The F/V North Star with the raised footrope net with frame caught more fish in general than did the F/V Tenacious with the control net as seen in the paired tows. Silver hake and red hake were higher and the bycatch of gray sole was up, but the bycatch of white hake and American plaice were about the same, producing a lower percent bycatch for the raised footrope net. Length frequency and percent length frequency of the same selected species for the raised footrope with roller frame and control nets show little difference in size selectivity between the two nets (Figures 1&2).

The third set of paired tows repeated the set, but with the net from the Tenacious rigged as the raised footrope trawl with inch dropper chains and 10 roller frame and the F/V North Star's net rigged as control. There were 9 paired tows in this set. The tow information is found on bottom half of Table 1 and shows the F/V Tenacious caught about half as much as the F/V North Star for total catch and bycatch and had about the same percent bycatch of regulated species, 8.4% vs 7.7%. The catch, bycatch and percent bycatch hour tow and per trip for this set are found in Table 2 and show the same general characteristics with around bycatch for both nets. Individual species catches in weight for the tows in the set are summed in Table 6a the catches in numbers are summed in Table 6b for the data. Mean catch in wt per tow by species for the two in the third set is listed in Table 4. The experimental caught about half the whiting, which was the bulk the catch, but about the same amount of red hake white hake. The weight of dabs and gray sole was about half that of the control. Selected species weights and numbers by paired tow for the raw data, compared for the two nets in Table 7 showed no remarkable fluctuations in catches between tows. While there were reductions the amount of flatfish taken, most noticeable result was large reduction in monkfish the raised footrope net. Length frequency and

Tows should be between one and two hours duration, of equal time between vessels for each pair of tows and as many pairs of tows as can reasonably be done in a day's fishing. IE, if 2 hour tows, 5 or 6 pairs might be done. If 1 hour tows are done, 10 to 12 pairs might be done. Tow time may be tuned to how long it takes to measure up a tow of fish. Tow logs and length frequency logs are to be the standard NMFS sea sampling logs. Gear to be tested: Net with grate bar spacing of 50 mm and cod end mesh size of 63.5 mm (2-1/2") diamond mesh (D1A), or 56 mm (2-1/4") square mesh (SQ) and 1. Raised footrope wiroler frame virol with grate bar spacing of 50 mm and cod end mesh size of 63.5 mm (2-1/2") diamond mesh (D1A), or 56 mm (2-1/4") square mesh (SQ) and 1. Raised footrope wiroler frame virol with grate bar spacing of 50 mm and cod end mesh size of 63.5 mm (2-1/2") with other to save the control of the control	Diagram 1: Paired Towing Schedule: F/V N	orth Star ar	nd F/V Tenacious.		first F/V
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percent length frequency for selected species from this second set for the raised footrope with roller frame and control nets show little difference in size selectivity between the two nets (Figures 3&4). The length frequency data

shows much fewer flatfish (plaice, sole), monkfish and silver hake caught with the raised footrope with frame net than with the control and about the same number of red and white hake, but no changes in the relative numbers at size. The difference between the two net/vessel combinations shows the F/V North Star caught more fish than the F/V Tenacious in both the raised footrope and control configurations and this confounds the comparison between gear.

If you compare each vessel to itself, raised footrope to control, in both cases the raised footrope net reduced the bycatch and percent bycatch of regulated species by about half, from 25 kg to 12 kg, or 18% to 8% for the Tenacious and from 22 kg to 11 kg, or 9% to 4% for the North Star (Table 2).

The second set of paired tows compared the raised footrope trawl with 30 inch dropper chains and no roller frame towed from the F/V North Star to a control net with no dropper chains and a 10 inch roller frame towed from the F/V Tenacious. Both nets had a 50 mm bar space grate and 2.6 inch diamond cod end. There were 9 paired tows in this set and the per tow information for date, time, gear, location, depth, weight of catch, weight of regulated species bycatch and percent of regulated species bycatch are found in Table 8. Of the 9 tow pairs, two of the experimental tows were no good, leaving 7 paired tows. The raised footrope with no roller frame trawl caught a third less fish than the control, but the bycatch was reduced from 45 kg to 6 kg, or 20% down to 3%. The catch, bycatch of regulated species and percent bycatch, standardized to a per hour towing basis are presented on a per tow basis and the tows are summed to a per trip basis (Table 2). The percent bycatch reduction is the same, 20% down to 3%, whether calculated on a per tow or a per trip basis. Individual species catch in weight for the raised footrope with no roller frame tows and the control net tows are summed in Table 9a and catch in numbers are summed in Table 9b for the raw data. Mean catch in wt per hour tow by species for the two nets is listed in Table 10. Selected species weights and numbers by paired tow for the raw data are compared for the two nets in Table 11. Length frequency and percent length frequency for selected species for the raised footrope with no roller frame and control nets show little difference in size selectivity between the two nets except for monkfish, which were not captured as frequently at the smaller sizes with the raised footrope net (Figures 5&6).

The fourth set of paired tows repeated the second set, but with the net from the F/V Tenacious rigged as the raised footrope trawl with 30 inch dropper chains and no roller frame and the F/V North Star's net rigged as the control. There were 10 paired tows in this set. The raw per tow information, on the bottom half of Table 8, shows the control caught about twice what the experimental net. This isn't surprising as the North Star regularly out-fished the Tenacious in these trials. The sweepless raised footrope trawl caught about a third as much regulated species as the control, so the percent bycatch was less, 2.9% vs 5.0%. The catch, bycatch of regulated species and percent bycatch, standardized to a per hour towing basis are presented on a per tow basis and the tows are summed to a per trip basis (Table 2). The per trip percent bycatch was 4.6% for the control and 3.0% for the sweepless raised footrope net. Individual species catch in weight for the raised footrope with no roller frame tows and the control net tows are summed in Table 12a and catch in numbers are summed in Table 12b for the raw data. As with the first set of paired tows with the sweepless net, the raised footrope caught a lower amount of flatfish relative to the control than it did white hake. Flats were reduced by 75% compared to 65% for white hake and 53% for silver hake. Mean catch in wt per hour tow by species for the two nets shows the same differences (Table 10). Selected species weights and numbers by paired tow for the raw data compared for the two nets again shows monkfish being caught in consistently very low numbers with the raised footrope trawl and flatfish released more than white hake (Table 13). Length frequency and percent length frequency for selected species for the raised footrope with no roller frame and control nets show little difference in size selectivity between the two nets even for the monkfish (Figures 7&8).

The fifth series of paired tows were made using diamond and square mesh cod ends to see if any difference in size selectivity was detectable. The diamond mesh was the same 2.6 inch mesh used throughout these experiments and the square mesh was 2.2 inch mesh stretched measure. Eight paired tows were made in all with the square mesh towed for four tows by each vessel. Both vessels used the raised footrope sweepless trawl, the raised footrope with sweep and the footrope down on the sweep in various tow pairings (Table 14). Length frequency comparisons for selected species showed no striking differences in selectivity for any species, although there may have been some increased release of small gray sole through the diamond mesh (Figure 9).

The F/V North Star used the sweepless trawl for another 20 days in October and November 2001 as part of the commercial testing/introduction segment of the work. A total of 71 tows were made of which 65 were good, clear tows without problems. The per tow information as well as the catch, bycatch of regulated species and percent bycatch are found in Table 15 and show very low bycatch (2.2 kg/hr) and percent bycatch (2.5%) of regulated species even though the whiting are no longer available inshore in any appreciable numbers at this time of the year (69.6 kg/hr).

During the fall and early winter of 2002-03, a series of tows were made from September through January, 03 using the 50mm bar space grate raised footrope sweepless trawl with 2-1/2 inch mesh cod end to document catch

of whiting and bycatch of regulated species over a wide area along the coast of Maine to define what area to ask for in Framework 38 for the fishery. Also, a final set of paired tows was conducted during the fall of 2002 to compare catch and bycatch with 3" cod end mesh compared to 2-1/2" mesh. The F/V North Star and F/V Tenacious were involved in both efforts. The F/V Tenacious towed the gear in September, 2002, December, 2002 and January, 2003 and made 21 tows that were free of troubles. The date, location, depth and other tow characteristics as well as total catch, whiting catch and regulated species catch and percent regulated species by tow and by trip are recorded in Table 16. Mean percent bycatch of regulated species was 3.79% per tow and 3.59% per trip. Occasional high percent bycatch were created by low levels of whiting in a tow with no increase in the regulated species caught over other tows (Table 16). Catch rates by species for each tow showed consistently low levels of bycatch dominated by herring and alewives (Table 17). Occasionally spiny dogfish would get tangled in the funnel in front of the grate and were weighed and measured as part of the catch. They were too large to go through the grate, so in a sense shouldn't be counted. The summary of total catch per tow and mean catch per tow by species shows a mean percent regulated species of 3.5% (Table 18). If the dogfish are removed from the total catch, the percent bycatch of regulated species rises to 4.5%, which is still respectable. The length frequency of whiting taken with this gear shows that the majority of whiting are over the minimum size for sexual maturity, 22 cm (Figure 10) which meets the goal of conserving the stock by limiting fishing mortality on juvenile fish.

The F/V North Star made 43 tows during October and November, 2002 of which 36 were good, clean tows without tearups, hangs, or using other gear. These tows complemented the tows made by the F/V Tenacious to provide a continuous series of tows throughout the fall. The date, location, depth and other tow characteristics as well as total catch, whiting catch, regulated species catch and percent regulated species by tow and by trip are recorded in Table 19. They show variable levels of catch in all three categories and two extraordinary catches of redfish, bumping the percent bycatch of regulated species for those tows to 39% and 58%. These helped to raise the mean percent bycatch of regulated species per trip to 5.80%, where without them, it would have been 3.19% for the 11 trips made. The catch by species per tow and percent bycatch regulated species per tow show a steady, low level of catch for the regulated species with the few notable exceptions (Table 20). Sometimes these translate into high bycatch percentages if the whiting catch is low for that tow. The summary total catch per tow and mean catch per tow by species shows the major regulated species bycatch to be redfish, followed by white hake, American plaice and gray sole with a percent bycatch of 5.11% (Table 21). The length frequency of whiting for this series of tows (Figure 11) is very similar to that for September, December and January (Figure 10). The percent length frequency for the two tow series shows that the whiting caught by the F/V North Star in October and November are a little larger on average, by about a centimeter (Figure 12). No difference in the gear is apparent, so it may be that the location fished was a little different, or that the size frequency available to the gear was slightly different during that period.

The length frequencies for the regulated species taken by the F/V North Star show a bimodal distribution for redfish, but the other three species, white hake, American plaice and grey sole are all unimodal in their size distribution (Figure 13). The frequencies are for total catch and show that redfish was the dominant regulated specie in the catch. While white hake was second in weight, it was third in numbers behind American plaice, but was comprised of larger individuals. The mean size of grey sole retained was larger than the mean size for American plaice, perhaps indicating a difference in cod end mesh selectivity based on the body firmness of the fish.

The frequency of tows exhibiting low levels of bycatch of regulated species is much greater than the frequency of tows with high levels. 80% of the 61 tows made between the two vessels showed bycatch level below 5% (Figure 14). The distribution of bycatch of individual regulated species by tow shows the rare high bycatch level of redfish and the more even elevated level of bycatch of white hake (Figure 15). The other species show variable, but generally low levels of take.

The distribution of bycatch of regulated species over the season and over depth was of interest in deciding what time of year to ask for in a fishery and what area along the coast to ask for in generating a fishery for whiting. The distribution of bycatch by depth showed little change over a depth range of 48 to 89 fathoms (Figure 16). The two high redfish catches were both in water over 70 fathoms, but other than those two tows, there is only a slight rise in bycatch levels with increasing depth. Indeed if you look at the total catch, whiting catch and regulated species catch per tow distribution over depth, there is a wide variability, but no discernable change with depth. The R squared values for linear regression with depth show no pattern associated with depth for any of the three catch levels (Figure 17). The percent bycatch of regulated species shows no relationship with total catch, however, the two high percent bycatch of redfish tows were both associated with lower than average total catch as were the two elevated white hake percent bycatch levels, thus there seems to be a greater chance of high percent bycatch if the total catch is low (Figure 18). The distribution of percent bycatch of regulated species over time from September,

2002 through January, 2003 showed no discernable change over time (Figure 19). All of the high bycatch levels (over 10%) occurred mid-season between mid October and mid November.

A comparison of catch and bycatch between 2-1/2 inch and 3 inch cod end mesh was carried out in November, 2002 using the Grate raised footrope sweepless trawl. A series of 16 paired tows were made with the F/V Tenacious and the F/V North Star. Cod ends were switched between vessels to provide an even split between the two vessels of experimental and control cod ends and to negate vessel effects. The date, location, depth and other tow characteristics as well as total catch, whiting catch, regulated species catch and percent regulated species by tow are recorded in Table 22. The catch by species by tow for the 3 inch cod ends shows variable catch rates for all species with whiting catches ranging from 4.4 kg to 90 kg (Table 23). In general, when whiting catch rates are high, percent bycatch is low. A few tows showed elevated catches of white hake, American plaice and grey sole relative to whiting, and one tow showed a very high catch of redfish, producing a high percent regulated species bycatch of 80%. This was also due in part to a comparatively low whiting catch. Only five of the 16 tows with the 3 inch cod end produced a bycatch of less than 5% and the mean regulated species bycatch rate was 20% (Table 23). The mean catch per 60 minute tow for 3 inch cod end tows was 10.6 kg, which was somewhat higher than the catch of regulated species for the tows done with the 2-1/2 inch cod end during the fall, 5.8 kg and the average total catch, 66.8 kg was lower than the average of 100.5 kg for the 2-1/2 inch cod end tows. Thus the high percent bycatch is due to a combination of higher bycatch weights and lower total catch weights. The 2-1/2 inch cod end fared a little better in percent bycatch of regulated species with a range of 3.2% to 28.3% and a mean of 10.7% for a 60 minute tow discounting the spiny dogfish catch (Table 24). The primary purpose of these tows was to see if the 3 inch cod end could be used to catch whiting and still maintain low bycatch. The bycatch of regulated species between the two cod ends was pretty comparable if the catch of large dogfish ahead of the grate was discounted and the one high redfish tow was discounted, producing 11.5% +/- 0.072 std. dev. for the 2-1/2 inch cod end and 9.2% +/- 0.065 std. dev. for the 3 inch cod end (Tables 23, 24). The summed catch by species and the mean catch by species for a 60 minute tow for the two cod ends (Table 25) shows that the distribution of fish for both cod ends is dominated by whiting and red hake, with white hake. American plaice and grev sole and an occasional high take of redfish comprising the majority of regulated species bycatch. The length frequency for the whiting retained showed little difference between the two cod ends (Figure 20) and both retain whiting predominantly over minimum spawning size. Thus from a whiting conservation standpoint, either cod end would be acceptable.

Summary of results and discussion: The raised footrope with the roller frame was tested in two sets of paired tows with the gear reversed between vessels between the two sets. In one set, the percent bycatch was reduced significantly to a level below 5% and in the other set it remained the same, at about 8%. These results are confounded by one vessel catching consistently more than the other, regardless of gear used. If you compare each vessel to itself, you see that the raised footrope with roller frame reduced the weight of bycatch to about half and in one case that brought the percent bycatch below 5% and in the other case it didn't. This may be helpful as the difference in how the two vessels had rigged their gear will be instructive in describing just how nets must be rigged in order to achieve the desired reduction in bycatch. Future work to be done this summer should shed light on this issue.

The raised footrope with no roller frame, dubbed the bottom friendly net, was also tested with two sets of paired tows and proved to reduce bycatch and percent bycatch better than the raised footrope with the roller frame achieving much less than 5% in both pairings. The difference between the nets in overall catch was still evident, but the bycatch weight reduction was sufficient to overcome this difference and produce low percent bycatch levels.

Differences between the two raised footrope nets and their respective control nets in catch of individual regulated species were consistent. Both raised footrope configurations did a better job of reducing flatfish and monkfish bycatch than they did white hake bycatch, however white hake bycatch was reduced as well.

No appreciable differences in size selectivity were observed between any of the trials, including the diamond mesh versus square mesh cod ends. This is not surprising as the nets used in all trials except the square mesh vs diamond mesh trials used the same grate bar spacing and cod end mesh for both experimental and control nets. The difference between them was in the configuration of the footrope.

During the fall of 2002 we further tested the raised footrope without a sweep for several reasons. It is important to understand what level of description of the gear is needed to put a fishery in place based on the successful use of this gear. Tows were conducted over a wide area as the scope of what area is eventually opened to whiting fishing may well depend on what area we have data from. Also, we developed a time series of samples to test for changes in bycatch with season and tested for variation in bycatch with depth. There were only slight

differences in bycatch with season, depth and location, justifying the request for a whiting fishery over a respectable area of bottom and over several months a year.

Testing the 3 inch diamond stretch mesh cod end in conjunction with the 50 mm bar space grate and raised footrope without a roller frame for bycatch was done because this mesh size is the current default mesh in the whiting FMP. If a Gulf of Maine whiting fishery is created based in part on this research and the default mechanism is invoked, the fishery may close as we would have no data on what bycatch would be with the 3 inch mesh. While the percent bycatch of regulated species was higher during these 3 inch cod end trials for both the 3 inch cod end and the 2-1/2 inch cod end, even compared to tows done around the same time of year with the 2-1/2 inch cod end, they were not wildly different from each other and were influenced by low total catch rates and occasional high bycatch rates.

Overall, the testing of the raised footrope sweepless trawl with 50 mm bar spacing in the grate over the past three years has shown uniformly low bycatch levels of regulated species over a wide range of locations, times of the year and depths. A total of 174 tows were made with a mean percent bycatch of regulated species of 3.9% with a standard deviation of 5.78. This data was sufficient to allow Framework Adjustment 38 to be approved by the New England Fishery Management Council, reinstating a whiting fishery along the Maine coast.

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Both Nets with 50 mm Bar Space Grate and 2.6 Inch Diamond Mesh Cod End.

Test: 30" Raised Footrope w/Frame vs Control Footrope Down on Frame.

North Star = Experimental Table 1. Two Sets of Paired Tows 30" Raised Footrope w/Frame vs Control Footrope Down on Frame.

/essel Date	Grate	Cod End	Dropper	Roller Dia	Tow	Begin	End	Begi	nning	E	ind	Water	Depth	Tow	Wire	Total Weight	Reg. Sp. Wt.	% Reg.Sp.
	(in)	(in)	(in)	(in)		Time	Time	Lat/I	Long	Lat	Long	Temp	Haul	Speed	Out	(kg)	(kg)	
								Decimal	degrees	Decima	l degrees	(°F)	(fm)	(kt)	(fm)			
Tenacious 9/15/200	2	2.6	0	10	1	6:42	7:37	43.541	70.011	43.570	69.976	0.0	51.7-62.2	2.6	150.0	63.1	11.2	17.7
Tenacious 9/15/200	2	2.6	0	10	2	8:11	9:12	43.565	69.979	43.532	69.942	0.0	54.9 -62.9	2.6	150.0	154.4	30.6	19.8
Tenacious 9/15/200	2	2.6	0	10	3	10:02	11:05	43.514	69.916	43.525	69.901	0.0	63.1 -59.6	2.6	150.0	270.4	70.8	26.2
Tenacious 9/16/2001	2	2.6	0	10	4	0:00	0:00					0.0	0	0.0	0.0	146.9	5.3	3.6
Tenacious 9/16/2001	2	2.6	0	10	5	8:54	0:00	43.607	69.863			0.0	47	2.5	125.0	118.8	8.8	7.4
Tenacious 9/16/2001	2	2.6	0	10	6	11:00	11:56	43.610	69.870	43.593	69.910	0.0	42-48	2.5	125.0	122.7	8.5	6.9
Tenacious 9/16/2001	2	2.6	0	10	7	12:30	13:39	43.579	69.933	43.556	69.938	0.0	48-57.8	2.5	150.0	103.3	16.1	15.6
Tenacious 9/16/2001	2	2.6	0	10	8	14:17	15:17	43.529	69.940	43.563	69.975	63.0	61	2.5	150.0	87.4	19.0	21.7
											Tenacious	2	2.6	0	10	1066.9	170.3	16.0
															Mean	133.4	21.3	14.9
															Median	120.8	13.7	16.7
North Star 9/15/2001	2	2.6	30	10	1	0:00	0:00		0.000		0.000	0.0	0	2.4	175.0	129.0	15.8	12.2
North Star 9/15/2001	2	2.6	30	10	2	0:00	0:00	43.557	69.974	43.527	69.937	0.0	60	2.4	175.0	*	*	*
North Star 9/15/2001	2	2.6	30	10	3	0:00	0:00	43.502	69.918	43.465	69.942	0.0	0	2.4	175.0	515.3	63.0	12.2
North Star 9/16/2001	2	2.6	30	10	4	7:22	8:25	43.968	69.886	43.594	69.860	0.0	0	2.4	125.0	261.5	3.0	1.1
North Star 9/16/2001	2	2.6	30	10	5	8:58	10:09	43.593	69.854	43.613	69.857	0.0	43	2.4	125.0	401.0	6.0	1.5
North Star 9/16/2001	2	2.6	30	10	6	11:05	11:57	43.605	69.859	43.596	69.893	0.0	45-48	2.5	125.0	210.5	5.5	2.6
North Star 9/16/2001	2	2.6	30	10	7	12:27	13:42	43.592	69.921	43.555	69.936	0.0	0	0.0	0.0	*	*	*
North Star 9/16/2001	2	2.6	30	10	8	14:25	15:26	43.523	69.937	43.551	69.968	0.0	60-56	2.5	175.0	197.7	30.8	15.6
											North Star	2	2.6	30	10	1714.9	124.0	7.2
Grate twisted, no d	ita														Mean	285.8	20.7	7.5
															Median	236.0	10.9	7.4

Test: 30" Raised Footrope w/Frame vs Control Footrope Down on Frame. Tenacious = Experimental

Vessel	Date	Grate	Cod End	Dropper	Roller Dia	Tow	Begin	End	Begi	nning	E	nd	Water	Depth	Tow	Wire	Total Weight	Reg. Sp. Wt.	% Reg.Sp
		(in)	(in)	(in)	(in)		Time	Time	Lat/	Long	Lat	/Long	Temp	Haul	Speed	Out	(kg)	(kg)	
									Decimal	degrees	Decima	degrees	(°F)	(fm)	(kt)	(fm)			
North Star	9/22/2001	2	2.6	0	10	18	6:47	7:41	43.607	69.903	43.609	69.857	0.0	45	2.0	125.0	140.6	11.8	8.4
North Star	9/22/2001	2	2.6	0	10	19	7:57	9:04	43.607	69.861	43.619	69.866	0.0	42	2.4	125.0	162.5	10.1	6.2
North Star	9/22/2001	2	2.6	0	10	20	9:18	10:26	43.619	69.868	43.604	69.850	0.0	40	2.4	125.0	192.0	9.6	5.0
North Star	9/22/2001	2	2.6	0	10	21	10:38	11:50	43.603	69.851	43.597	69.905	0.0	45	2.4	125.0	226.8	10.6	4.7
North Star	9/22/2001	2	2.6	0	10	22	12:12	13:48	43.600	69.906	43.590	69.882	0.0	41	2.4	125.0	224.7	12.4	5.5
North Star	9/23/2001	2	2.6	0	10	23	5:55	7:08	43.524	69.904	43.485	69.947	0.0	58	2.4	175.0	329.3	32.0	9.7
North Star	9/23/2001	2	2.6	0	10	24	7:26	8:32	43.484	69.948	43.517	69.907	0.0	59	2.4	175.0	461.1	53.5	11.6
North Star	9/23/2001	2	2.6	0	10	25	9:17	10:28	43.513	69.910	43.477	69.949	0.0	62	2.4	175.0	475.1	59.5	12.5
North Star	9/23/2001	2	2.6	0	10	26	11:15	12:23	43.481	69.946	43.520	69.911	0.0	60	2.4	175.0	489.2	28.1	5.7
												North Star	2	2.6	0	10	2701.3	227.6	8.4
																Mean	300.1	25.3	7.7
																Median	226.8	12.4	6.2
Tenacious	9/22/2001	2	2.6	30	10	18	8:00	8:40	43.604	69.882	43.607	69.855	0.0	46-43	2.6	125.0	136.9	7.2	5.3
Tenacious	9/22/2001	2	2.6	30	10	19	9:03	10:06	43.607	69.869	43.628	69.904	0.0	46-43	2.6	125.0	121.7	10.8	8.8
Tenacious	9/22/2001	2	2.6	30	10	20	10:28	11:30	43.624	69.871	43.590	69.837	0.0	43-44	2.7	125.0	114.1	6.9	6.0
Tenacious	9/22/2001	2	2.6	30	10	21	11:48	13:04	43.616	69.867	43.592	69.896	62.6	44-43	2.7	125.0	137.2	5.3	3.9
Tenacious	9/22/2001	2	2.6	30	10	22	13:20	14:53	43.594	69.898	43.590	69.891	63.3	46-47	2.7	125.0	131.6	8.9	6.7
Tenacious	9/23/2001	2	2.6	30	10	23	7:08	8:09	43.514	69.906	43.482	69.946	64.0	60.8-64.7	2.7	175.0	143.8	14.1	9.8
Tenacious	9/23/2001	2	2.6	30	10	24	8:33	9:40	43.483	69.941	43.514	69.901	66.3	64-59.9	2.5	175.0	197.1	23.9	12.1
Tenacious	9/23/2001	2	2.6	30	10	25	10:24	11:26	43.505	69.905	43.473	69.942	64.5	66-63	2.5	175.0	193.6	27.2	14.0
Tenacious	9/23/2001	2	2.6	30	10	26	12:25	13:40	43.487	69.940	43.515	69.904	67.1	65-64	2.5	175.0	168.2	14.8	8.8
												Tenacious	2	2.6	30	10	1344.2	119.0	8.8
																Mean	149.4	13.2	8.4
												THE RESERVE				Median	137.2	10.8	8.8

Table 2. Comparison of Total Catch Weight/Hour Towing, Regulated Species Weight/Hour Towing and Percent of Regulated Species for Nets with 30" Dropper Chains to a 10" Roller Frame and 30" Dropper Chains with No Roller Frame versus Control Net with no Droppers and 10" Roller Frame.

All Nets had a 50 mm Bar Space Grate and 2.6 Inch Diamond Cod End.

V1	0 1	0						
Vessel	Grate (in)	Cod End (in)	Dropper (in)	(in)	Tot.Wt./Hr (kg)	Reg.Sp./Hr % (kg)	% Reg.Sp.	% Reg.Sp (Per Trip
	(11)	(111)	(111)	(111)	(kg)	(Ng)		Basis)
30" Droppers and 10" R	oller Fran	ne vs Contro	ol					Dasis
1st Trial Tenacious	2	2.6	0	10	786.85	151.85	19.30	
Mean					131.14	25.31	18.00	18.30
StdDev N					69.12	21.90		6.59
N					6	6		2
North Star	2	2.6	30	10	1025.22	44.52	4.34	
Mean					256.30	11.13	5.20	4.34
StdDev					60.23	12.83		
N					4	4		1
2nd Trial North Star	2	2.6	0	10	2323.57	197.22	8.49	
Mean					258.17	21.91	7.71	7.87
StdDev					125.66	17.11		2.80
N					9	9		2
Tenacious	2	2.6	30	10	1264.74	111.00	8.78	
Mean					140.53	12.33	8.39	8.74
StdDev					40.89	7.32		3.85
N					9	9		2
30" Droppers with No Fr	ame vs C	Control						
1st Trial Tenacious	2	2.6	0	10	2371.97	439.89	18.55	
Mean					263.55	48.88	19.94	19.66
StdDev					85.59	6.42		4.86
N					9	9		2
North Star	2	2.6	30	0	933.60	27.22	2.92	
Mean					155.60	4.54	2.62	2.88
StdDev					55.72	3.06		0.22
N					6	6		2
2nd Trial North Star	2	2.6	0	10	1760.04	81.27	4.62	
Mean					176.00	8.13	5.92	4.59
StdDev					59.95	4.02		1.03
N					10	10		2
Tenacious	2	2.6	30	0	875.67	26.21	2.99	
Mean			00		87.57	2.62	2.76	2.96
StdDev					39.70	2.41		0.70
N					10	10		2

	Contr. 1	Tenacious Contr. 2	Tenacious Contr. 3	Tenacious Contr. 4	Tenacious Contr. 5	Tenacious Contr. 6	Tenacious Contr. 7	Tenacious Contr. 8	Tenacious	Tenacious	Tenacious	3			r North Star						North Star	North Star	North Star	
Species	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Sum	Wt./Tow	Std Day	Wt./Hr Tow	Exper. 1 Tot. Wt.	Exper. 2 Tot. Wt.	Exper. 3 Tot, Wt.	Exper. 4 Tot. Wt.	Exper. 5 Tot. Wt.	Exper. 6 Tot. Wt.	Exper. 7 Tot. Wt.	Exper. 8 Tot. Wt.	Sum	Wt./Tow	Std.Dev.	VAN DIE T
	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	Ouin	kg.	Old.Dev.	VVI.JIII TOW	kg.	Sum	VVI./ I OW	Std.Dev.	VVI./HI I C							
Shrimp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0		1.8	0.0	0.0	0.0	ng.	0.0	1.8	0.3	0.714	0.0
Whiting/Silver Hake	21.5	62.5	150.5	96.4	54.3	58.5	39.5	30.0	513.2	64.2	41.783	59.8	83.5		385.0	198.0	210.0	155.0		90.0	1121.5	186.9	110,453	158.6
EXP Whiting	21.5	62.5	150.5	96.4	54.3	58.5	39.5	30.0	513.2	64.2	41.783	59.8	83.5		385.0	198.0	210.0	155.0		90.0	1121.5	186.9	110.453	158.6
Red Hake (Ling)	20.5	27.5	38.5	9.5	5.3	7.4	8.0	22.0	138.7	17.3	11.803	20.4	21.0		51.0	19.3	24.5	15.0		57.0	187.8	31.3	17.954	28.1
White Hake	0.2	6.5	25.0	2.0	3.8	3.0	3.4	3.5	47.4	5.9	7.907	6.9	1.3		10.0	0.0	0.0	1.5		4.0	16.8	2.8	3.822	1.3
Redfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
American Plaice (Dab)	7.6	15.0	22.5	2.7	3.6	3.9	9.1	9.5	73.9	9.2	6.707	11.1	8.0		22.0	2.8	4.0	3.3		11.0	51.0	8.5	7.343	5.1
Gray Sole (Witch Flounder)	1.3	8.5	22.9	0.3	0.3	0.1	2.3	5.5	41.2	5.2	7.763	6.7	3.5		31.0	0.0	0.8	0.5		14.3	50.0	8.3	12.333	3.8
ndowpane Flounder (Sand Dab)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Winter Flounder (Blackback)	0.5	0.2	0.2	0.0	1.1	0.7	0.8	0.5	4.0	0.5	0.369	0.5	0.0		0.0	0.3	0.8	0.0		1.5	2.5	0.4	0.606	0.6
Yellowtail Flounder	0.7	0.4	0.3	0.3	0.0	0.8	0.5	0.0	3.0	0.4	0.294	0.4	0.0		0.0	0.0	0.5	0.3		0.0	0.8	0.1	0.209	0.2
Cod	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.106	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Haddock	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.212	0.1	3.0		0.0	0.0	0.0	0.0		0.0	3.0	0.5	1,225	0.0
Pollock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Gulf Stream Flounder	0.0	0.0	0.0	0.0	1.6	4.3	0.1	1.0	7.0	0.9	1.509	0.9	0.0		0.0	0.0	8.3	4.3		0.0	12.5	2.1	3.467	3.0
Ocean Pout	0.0	0.5	0.5	0.0	1.0	0.0	0.1	0.5	2.6	0.3	0.362	0.3	0.0		0.0	0.0	0.0	0.0		0.5	0.5	0.1	0.204	0.1
Mackeral	0.0	0.5	0.2	0.1	0.1	0.0	0.1	0.2	1.2	0.2	0.160	0.2	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Herring	0.3	19.5	1.5	18.5	34.0	27.5	21.5	8.0	130.8	16.4	12.099	12.9	1.0		0.0	15.0	133.0	15.5		10.0	174.5	29.1	51.342	42.1
Alewife	0.5	4.5	1.6	1.0	0.6	0.7	3.6	1.5	14.0	1.8	1.494	2.0	1.3		3.0	1.0	0.0	1.5		2.3	9.0	1.5	1.037	1.2
Cusk (Spotted)	0.0	0.1	1.2	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.419	0.2	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Monkfish/Goosefish	2.5	2.5	1.2	2.3	1.3	3.1	2.6	1.8	17.3	2.2	0.667	2.3	3.0		2.0	6.0	5.0	3.5		3.3	22.8	3.8	1.453	4.3
Sculpin	0.1	0.1	0.1	4.5	4.2	3.3	1.7	0.1	14.1	1.8	1.959	0.9	1.0		0.0	5.5	3.3	4.3		0.0	14.0	2.3	2.333	3.2
Spiny Dog/Dogfish	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.107	0.1	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Butterfish	1.6	3.4	1.6	1.4	2.5	2.3	4.5	0.5	17.8	2.2	1.258	2.3	1.5		2.0	1.3	1.5	1.0		1.4	8.7	1.4	0.332	1.3
Loligo Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
lllex	0.3	1.3	1.9	0.3	0.9	0.2	1.1	1.1	7.1	0.9	0.591	1.0	1.0		7.5	0.0	0.0	0.0		2.5	11.0	1.8	2.944	0.6
Scallops	0.1	0.1	0.2	2.5	0.0	0.0	0.0	0.0	2.9	0.4	0.868	0.1	0.0		0.0	6.5	0.0	0.0		0.0	6.5	1.1	2.654	1.6
Lobster	4.5	0.9	0.0	4.8	4.1	6.8	4.4	1.7	27.2	3.4	2.297	3.0	0.0		0.0	6.0	9.5	5.0		0.0	20.5	3.4	4.030	5.0
Jonah Crab	0.0	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.8	0.1	0.120	0.1	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Rock Crab	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.046	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.000	0.0
Total: All Species	63.1	154.4	270.4	146.9	118.8	122.7	103.3	87.4	1066.9	133.4	62.867	132.1	129.0		513.5	261.5	401.0	210.5		197.7	1713.2	285.5	144.038	260.1
Total: Regulated Species	11.2	30.6	70.8	5.3	8.8	8.5	16.1	19.0	170.3	21.3	21.538	25.7	15.8		63.0	3.0	6.0	5.5		30.8	124.0	20.7	23.131	11.0
Ratio Reg. Sp. To Total Sp.	0.177	0.198	0.262	0.036	0.074	0.069	0.156	0.217	0.160	0.160	0.081	0.195	0.122		0.123	0.011	0.015	0.026		0.156	0.072	0.072	0.065	0.042

	Tenacious	North Sta	North Star	North Sta	r North Star	North Sta	r North Star	North Star	North Star	North Star	North Star	North S										
	Contr. 1	Contr. 2	Contr. 3	Contr. 4	Contr. 5	Contr. 6	Contr. 7	Contr. 8				Exper. 1	Exper. 2	Exper. 3		Exper. 5	Exper. 6	Exper. 7	Exper. 8	riorar otal	riorar otar	14014110
Species	Tot. Num	Tot. Num.	Sum	Num./Tow	Std.Dev.	Total	Total	Total	Total	Total	Total	Total	Total	Sum	Num_/Tow	Std.De						
												Number	Number	Number	Number	Number	Number	Number	Number			
Shrimp	0	0	0			0	0	0	0	0	0.000	0		0	0	0	0		0	0	0	0.000
Whiting/Silver Hake	75	146	99			161	141	137	759	127	32.556	100		0	70	86	33		25	314	52	38.92
EXP Whiting	190	652	1355			608	371	329	3504	584	415.851	686			2218	2580	1705		750	7939	1323	852.9
Red Hake (Ling)	79	0	0			30	0	0	109	18	32.127	47		0	124	141	99		308	719	120	105.8
White Hake	2	0	613			17	17	21	670	112	245.550	7		0	0	0	10		22	39	7	8.71
Redfish	0	0	0			0	0	0	0	0	0.000	0		0	0	0	0		0	0	0	0.00
American Plaice (Dab)	88	197	111			42	100	109	647	108	50.499	64		0	33	48	41		139	325	54	46.6
Gray Sole (Witch Flounder)	34	102	4122			1	30	66	4355	726	1664.133	34		0	5	4	2		137	182	30	53.7
owpane Flounder (Sand Dab)	0	0	0			0	0	0	0	0	0.000	0		0	0	0	0		0	0	0	0.0
/inter Flounder (Blackback)	6	2	1			2	5	2	18	3	2.000	0		0	2	2	0		7	11	2	2.7
Yellowtail Flounder	5	1	1			4	3	0	14	2	1.966	0		0	0	2	1		2	5	1	0.9
Cod	1	0	0			0	0	0	1	0	0.408	0		0	0	0	0		0	0	0	0.0
Haddock	7	0	0			0	0	0	7	1	2.858	24		0	0	0	0		0	24	4	9.79
Pollock	0	0	0			0	0	0	0	0	0.000	0		0	0	0	0		0	0	0	0.00
Gulf Stream Flounder	0	0	0			6	0	1	7	1	2.401	0		0	0	16	7		0	23	4	6.5
Ocean Pout	0	1	1			0	1	0	3	1	0.548	0		0	0	0	0		1	1	0	0.4
Mackeral	0	2	1			0	4	0	7	1	1.602	0		0	0	0	0		0	0	0	0.0
Herring	6	0	0			0	0	0	6	1	2.449	7		0	155	59	160		83	464	77	69.
Alewife	6	0	0			0	0	0	6	1	2.449	13		0	11	0	14		18	56	9	7.5
Cusk (Spotted)	0	1	1			0	0	2	4	1	0.816	0		0	0	0	0		0	0	0	0.0
Monkfish/Goosefish	4	7	7			11	13	6	48	8	3.347	17		0	22	20	15		12	86	14	7.8
Sculpin	1	1	0			17	0	0	19	3	6.795	0		0	26	15	27		0	68	11	13.1
Spiny Dog/Dogfish	0	1	2			0	0	0	3	1	0.837	0		0	0	0	0		0	0	0	0.0
Butterfish	31	0	17			30	52	5	135	23	19.191	17		0	11	26	12		15	81	14	8.5
Loligo Squid	0	0	0			0	0	0	0	0	0.000	0		0	0	0	0		0	0	0	0.0
Illex	5	0	0			0	0	0	5	1	2.041	4		0	0	0	0		20	24	4	8.0
Scallops	3	2	0			0	0	0	5	1	1.329	0		0	9	0	0		0	9	2	3.6
Lobster	21	3	0			0	16	0	40	7	9.374	0		0	0	0	0		0	0	0	0.0
Jonah Crab	0	1	0			0	0	0	1	0	0.408	0		0	0	0	0		0	Ó	0	0.0
Rock Crab	0	1	8			0	0	0	9	2	3.209	0		0	0	0	0		0	ó	o	0.0
Total: All Species	489	974	6239			768	612	541	9622	1604	2277.614	920		0	2616	2913	2093		1514	10056	1676	1094
Total: Regulated Species	143	302	4848			66	155	198	5712	952	1910.006	129		0	40	56	54		307	586	98	110

Table 4. Mean Catch (kg) Per Hour Tow by Species for Two Trials: 30" Dropper Chain with 10" Roller Frame vs Control Net with Footrope Down on 10" Roller Frame. Both with 50 mm Bar Space Grate and 2.6" Diamond Cod End. Paired Tows in Trial 2 Only.

	Tri	al 1	Tria	al 2
	North Star	Tenacious	Tenacious N	North Star
Dropper Chain Length	30	0	30	0
Roller Frame Diameter	10	10	10	10
Number of Tows	N = 4	N = 6	N = 9	N = 9
Shrimp	0.0	0.0	0.0	0.0
Whiting/Silver Hake	158.6	59.8	90.0	197.6
Red Hake (Ling)	28.1	20.4	23.0	24.0
White Hake	1.3	6.9	6.2	8.8
Redfish	0.0	0.0	0.0	0.0
American Plaice (Dab)	5.1	11.1	2.7	7.0
Gray Sole (Witch Flounder)	3.8	6.7	2.7	5.6
Windowpane Flounder (Sand Dab)	0.0	0.0	0.0	0.0
Winter Flounder (Blackback)	0.6	0.5	0.1	0.0
Yellowtail Flounder	0.2	0.4	0.2	0.0
Cod	0.0	0.0	0.0	0.0
Haddock	0.0	0.1	0.0	0.0
Pollock	0.0	0.0	0.0	0.0
Scallop	3.0	0.9	1.2	1.8
Ocean Pout	0.1	0.3	0.2	0.4
Mackeral	0.0	0.2	0.0	0.2
Herring	42.1	12.9	1.8	0.4
Alewife	1.2	2.0	0.8	0.8
Cusk (Spotted)	0.0	0.2	0.0	0.0
Monkfish/Goosefish	4.3	2.3	0.3	1.9
Sculpin	3.2	0.9	1.0	1.2
Spiny Dog/Dogfish	0.0	0.1	1.0	0.4
Butterfish	1.3	2.3	0.6	0.9
Loligo Squid	0.0	0.0	0.0	0.0
Illex	0.6	1.0	1.5	1.6
Octopus	1.6	0.1	0.0	0.0
Lobster	5.0	3.0	1.5	3.3
Jonah Crab	0.0	0.1	0.0	0.0
Rock Crab	0.0	0.0	0.0	0.0
All Species Total	260.1	132.1	134.6	256.0
Reg. Species Total	11.0	25.7	11.9	21.6
Percent Reg. Sp. Bycatch	4.226	19.495	8.849	8.426

Table 5. Catch in Weight and Number by Paired Tow for Selected Species for 30 Inch Raised Footrope with 10 Inch Roller Frame

Net (F/V North Star) and for Control Net with Footrope Down on 10 Inch Frame (F/V Tenacious).

Both Nets Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

American Plaice Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control Weight(kg)	30" D&Roller Weight(kg)	Control Number	30" D&Roller Number
1	7.6	8	88	64
2	15	0*	197	0*
3	22.5	22	111	200
4	2.7	2.75	0*	33
5	3.6	4	0*	48
6	3.9	3.25	42	41
7	9.1	0*	100	0*
8	9.5	11	109	139

^{*} No Data. Bad tows, or weights only recorded.

Grey Sole Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	1.3	3.5	34	34
2	8.5	0*	102	0*
3	22.9	31	252	319
4	0.3	0	0*	5
5	0.3	0.75	0*	4
6	0.1	0.5	1	2
7	2.3	0*	30	0*
8	5.5	14.25	66	137

^{*} No Data. Bad tows, or weights only recorded.

Monkfish Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	2.5	3	4	17
2	2.5	0*	7	0*
3	1.2	2	7	8
4	2.3	6	0*	22
5	1.3	5	0*	20
6	3.1	3.5	11	15
7	2.6	0*	13	0*
8	1.8	3.25	6	12

^{*} No Data. Bad tows, or weights only recorded.

Red Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	20.5	21	79	47
2	27.5	0*	0	0*
3	38.5	51	0	0*
4	9.5	19.25	0*	124
5	5.3	24.5	0*	141
6	7.4	15	30	99
7	8	0*	0*	0*
8	22	57	0*	308

^{*} No Data. Bad tows, or weights only recorded.

White Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	0.2	1.25	2	7
2	6.5	0*	0	0*
3	25	10	84	0
4	2	0	0*	0
5	3.8	0	0*	0
6	3	1.5	17	10
7	3.4	0*	17	0*
8	3.5	4	21	22

^{*} No Data. Bad tows, or weights only recorded.

Silver Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Sour with	ou mini Grate	and 2.6 Diamo	na Coa Ena	
Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	21.5	83.5	190	686
2	62.5	0*	652	0*
3	150.6	385	1355	0*
4	96.4	198	0*	2218
5	54.3	210	0*	2580
6	58.5	155	608	1705
7	39.5	0*	371	0*
8	30	90	329	750

^{*} No Data. Bad tows, or weights only recorded.

										North Sta	r North Star	North Sta	r North Star	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	a Tenaciour
Species	Contr. 18							Contr. 25						Exper. 18				Exper. 22	Exper. 23	Exper. 24	Exper. 25	Exper. 26				
	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Sum	Wt./Tow	Std.Dev.	Wt/Hr Tow	Tot. Wt.		Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Tot. Wt.	Sum	Wt./Tow	Std.Dev.	Wt/Hr Tov
Shrimp	kg. 0.0	kg. 0.0	kg. 0.0	kg.	kg.	kg. 0.0	kg. 0.0	kg.	kg.	0.0	kg.			kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.		kg.		
Whiting/Silver Hake	100.0	125.0	150.0	160.0	-			0.0	0.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
EXP Whiting	100.0	125.0	150.0	160.0	160.0 160.0	250.0 250.0	360.0	360.0	420.0	2085.0	231.7	119.583	197.6	98.5	83.25	69.5	93.75	86.5	96.75	134	119	117	898.3	99.8	20.157	90.0
Red Hake (Ling)	17.0	16.0	15.0	27.0	24.0	41.0	360.0 38.5	360.0	420.0	2085.0	231.7	119.583	197.6	98.5	83.25	69.5	93.75	86.5	96.75	134	119	117	898.3	99.8	20.157	90.0
White Hake	10.0	8.0	7.0	5.2	5.8	13.5		41.0 22.5	34.0	253.5	28.2	10.811	24.0	18.75	19.25	16	24.5	22	27.5	34.75	36.5	30	229.3	25.5	7.236	23.0
Redfish	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	10.5	93.0	10.3	5.264	8.8	5.25	8.25	4.6	3.3	6.5	9	3.4	14.5	7.5	62.3	6.9	3.495	6.2
American Plaice (Dab)	1.5	1.6	2.5	5.0	6.2	10.5	15.0	20.0	12.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Gray Sole (Witch Flounder)	0.1	0.1	0.1	0.4	0.2		28.0			74.3	8.3	6.523	7.0	1.25	1.75	1.5	1.1	1.5	2.7	7.25	6.7	2.8	26.6	3.0	2.361	2.7
(indowpane Flounder (Sand Dab)	0.1	0.0	0.0		0.4	8.0		17.0	5.2	59.3	6.6	9.834	5.6	0.1	0.25	0.2	0.4	0.1	2.4	13	5.8	4.5	26.8	3.0	4.322	2.7
Winter Flounder (Blackback)	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Yellowtail Flounder	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.113	0.0	0.2	0.3	0.1	0.5	0	0	0	0	0	1.1	0.1	0.179	0.1
Cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.5	0.1	0.133	0.0	0.4	0.2	0.4	0	0.75	0	0.2	0.2	0	2.2	0.2	0.247	0.2
Haddock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Pollock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Little Skate	1.1	0.8	4.0	7.0	4.0	0.1	1.0	0.0	0.0	0.0 18.8	0.0	0.000	0.0	0	0	0.1	0	0	0	0	0	0	0.1	0.0	0.033	0.0
Shad	0.2	0.8	1.0	1.0	0.7	0.0	0.1	0.0	0.0	3.8	2.1	2.540 0.444	1.8	1.5	0.2	0.4	3.4	4.4	1	0.2	0.4	0	11.5	1.3	1.576	1.2
Mackeral	0.1	0.2	0.1	1.4	0.1	0.0	0.0	0.0		1.9	0.4		0.4	0	0.75	0	0	0.05	0.02	1.1	0	0	1.9	0.2	0.413	0.2
Herring	0.1	0.1	0.1	2.3	0.5	0.8	0.0	0.0	0.0	4.0	0.2	0.451	0.2	0.3	0	0	0.1	0	0	0.05	0	0	0.5	0.1	0.100	0.0
Alewife	0.1	0.1	0.1	0.6	0.5	1.4	1.0	1.8	2.4	8.0	0.9	0.745	0.4	0.2	0.25	14.5	1.7	0.5	0.7	0.1	0	0	18.0	2.0	4.720	1.8
Cusk (Spotted)	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.9	0.050	0.8	0.5	0.25	0.6	0.5	0.1	1.1	1	1.2	2.9	8.2	0.9	0.838	0.8
Monkfish/Goosefish	1.5	1.2	2.0	2.6	5.6	0.8	2.0	1.6	3.2	20.5	2.3	1,439	0.0 1.9	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Sculpin	2.5	2.2	1.6	4.0	2.4	0.0	0.0	0.0	0.0	12.7	1.4	1.439	1.9	0	1.75	0.2	0.1	0.5	0.05	0.05	0	0	2.7	0.3	0.569	0.3
Spiny Dog/Dogfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	4.2	0.5	1.479	0.4	2.5	2.25	0.7	0.8	3.5	0	0	0	0	9.8	1.1	1.329	1.0
Butterfish	0.0	0.3	1.2	1.0	2.2	0.0	3.3	0.8	0.5	9.3	1.0	1.092	0.9	0.5	0.75		0	0	0	0.1	6.5	0.3	9.6	1.1	2.219	1.0
Loligo Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.5	0.75	1.9	1.6	0.9	0.1	0.1	0.1	0.4	6.4	0.7	0.662	0.6
Illex	0.7	1.1	0.8	1.2	1.2	3.2	1.6	6.2	1.0	17.0	1.9	1.780	1.6	1.5	U		0	0	0	0	0	0	0.0	0.0	0.000	0.0
Octopus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	1.5	0	0.9	0.4	1.2	2.5	1.8	2.7	2.8	14.8	1.6	0.862	1.5
Lobster	5.5	4.5	6.5	8.0	10.2	0.0	0.0	0.0	0.0	34.7	3.9	3.984	3.3	2.75			0	0	U	0	0	0	0.0	0.0	0.000	0.0
Jonah Crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	2.75	1.25	2.5	5	3.1	0	0	0	0	14.6	1.6	1.813	1.5
Rock Crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Total: All Species	140.6	162.5	192.0	226.8	224.7	329.3	461.1	475.1	489.2	2701.3	300.1	141.543	256.0	136.9		0	0	0	0	0	0	0	0.0	0.0	0.000	0.0
Total: Regulated Species	11.8	10.1	9.6	10.6	12.4	32.0	53.5	59.5	28.1	227.6	25.3	19.557	21.6	7.2	121.7	114.1	137.15	131.6	143.82	197.1	193.6	168.2	1344.2	149.4	30.104	134.6
Ratio Reg. Sp. To Total Sp.	0.084	0.062	0.050	0.047	0.055	0.097	0.116	0.125	0.057	0.084	0.084	0.030	0.084	0.053	10.75	0.060	0.039	8.85 0.067	0.098	23.85	0.140	14.8	119.0	13.2 0.088	7.712 0.033	11.9 0.088

down on 10" roller fram	e (F/V Nor	th Star). B	oth nets h	ave 50 mm	bar space	grates an	d 2.6" dian	nond mesh	cod ends.															
		Contr. 19								North Star	North Sta	r North Star	Tenaci	ous Tenac	cious Tenad	ious Tenaciou	s Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	s Tenaciou	s Tenacio
									Tot. Num.	Cum	Nine Co.	Std.Dev.	Exper.	18 Exper	. 19 Exper	20 Exper. 21	Exper. 22	Exper. 23	Exper. 24	Exper. 25	Exper. 26			
	Tot. Hum.	TOL HUII.	rot ivaii.	TOL HUITI.	TOC INGIII.	rot. Nulli.	TOL INUITI.	TOL. INUITE.	TOL NUM.	Sum	Num./Tov	Std.Dev.	lot. N	m. lot. N	lum. Tot. N	lum. Tot. Num	. Tot. Num.	Tot. Num.	Tot. Num.	Tot. Num.	Tot, Num.	Sum	Num./Tov	w Std.De
Shrimp	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	0	0	0	0	0.000
Whiting/Silver Hake	59	58	58	64	46	40	45	47	50	467	52	8.085	57	52	2 40	49	49	44	45	43	40	419	47	5.68
EXP Whiting	1054	1115	1673	1506	1227	2500	3857	3845	4773	21550	2394	1415.090	112	86	6 58	5 919	1211	851	1206	1023	1170	8955	995	209.1
Red Hake (Ling)	106	126	103	58	68	168	185	180	163	1157	129	47.943	128	94	1 74	123	127	99	124	159	144	1071	119	26.18
White Hake	59	55	50	26	35	35	27	49	29	365	41	12.749	32	39	28	18	35	22	11	20	18	222	25	9.08
Redfish	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	0	0	0	0	0.00
American Plaice (Dab)	20	14	31	50	56	111	162	186	91	721	80	62.124	9	17	7 14	7	16	23	56	54	27	223	25	18.2
Gray Sole (Witch Flounder)	3	2	3	2	12	80	233	185	45	565	63	87.778	1	2	2	2	2	24	100	45	42	220	24	33.5
dowpane Flounder (Sand Dab)	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	0	0	0	0	0.00
Vinter Flounder (Blackback)	2	4	0	0	0	0	0	0	0	6	1	1.414	1	2	1	2	0	0	0	0	0	6	1	0.8
Yellowtail Flounder	1	2	0	0	0	0	0	0	2	5	1	0.882	1	1	3	0	3	0	1	1	o o	10	4	1.1
Cod	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	o o	0	0	0	0.0
Haddock	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	0	0	0	0	0.0
Pollock	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	1	0	0	0	0	0	0	1	0	0.3
Little Skate	2	1	6	11	10	1	1	0	0	32	4	4.333	2	1	1	4	7	1	1	1	0	18	2	2.1
Shad	2	1	1	1	3	0	1	0	0	9	1	1.000	0	2	0	0	1	1	2	o	o o	6	1	0.8
Mackeral	0	2	1	2	1	0	0	0	0	6	1	0.866	1	0	0	1	0	0	2	0	0	4	ó	0.7
Herring	3	2	2	19	5	6	1	0	0	38	4	5.911	1	2	16	17	6	8	1	Õ	o	51	6	6.7
Alewife	1	4	2	4	5	10	10	13	14	63	7	4.822	4	3	5	6	1	10	8	8	19	64	7	5.2
Cusk (Spotted)	0	0	0	1	1	0	0	0	0	2	0	0.441	0	0	0	0	0	0	0	0	0	0	ń	0.0
Monkfish/Goosefish	6	4	4	13	24	4	14	7	10	86	10	6.635	0	4	1	1	1	1	1	0	ő	q	1	1.2
Sculpin	15	10	7	24	14	0	0	0	0	70	8	8.671	7	8	4	6	15	0	Ó	0	Ô	40	4	5.1
Spiny Dog/Dogfish	0	0	0	0	0	0	0	4	0	4	0	1.333	4	0	0	0	0	7	1	10	1	23	3	3.6
Butterfish	4	4	14	13	21	0	4	10	7	77	9	6.560	6	9	21	22	12	2	2	4	4	82	9	7.7
Loligo Squid	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	ō	ō	o o	Ô	0	0	0.0
Illex	5	6	6	8	13	28	14	48	11	139	15	14.090	3	7	6	4	7	19	16	25	23	110	12	8.5
Octopus	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	Ó	o	0	0	0	0	0	0	0.0
Lobster	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0	0	0	0	0	0	0	0	0	0.0
Jonah Crab	0	0	0	0	0	0	n	0	0	0	0	0.000			0	0	0			9	3	3		
Rock Crab	0	0	0	0	0	0	0	ő	0	0	0	0.000	0	0	U	0	0	0	0	0	O.	0	0	0.0
Total: All Species	1283	1352	1903	1738	1495	2943	4509	4527	5145	24895	2766	1559.157	1322	0	0	0	0	0	0	0	0	0	0	0.00
Total: Regulated Species	85	77	84	78	103	226	422	4327	167	1662	185	142,932	1322	105	6 762	1131	1444	1068	1532	1350	1448	11114	1235	248.

Table 7. Catch in Weight and Number by Paired Tow for Selected Species for 30 Inch Raised Footrope with 10 Inch Roller Frame

Net (F/V Tenacious) and for Control Net with Footrope Down on 10 Inch Frame (F/V North Star).

Both Nets Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

American Plaice Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End.

ow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	1.5	1.25	20	9
2	1.6	1.75	14	17
3	2.5	1.5	31	14
4	5	1.1	50	7
5	6.2	1.5	56	16
6	10.5	2.7	111	23
7	15	7.25	162	56
8	20	6.7	186	54
9	12	2.8	91	27

^{*} No Data. Bad tows, or weights only recorded.

Grey Sole Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End.

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	0.1	0.1	3	1
2	0.1	0.25	2	2
3	0.1	0.2	3	2
4	0.4	0.4	2	2
5	0.4	0.1	12	2
6	8	2.4	80	24
7	28	13	233	100
8	17	5.8	184	45
9	5.2	4.5	45	42

^{*} No Data. Bad tows, or weights only recorded.

Monkfish Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Dour with	oo min Crate	and 2.0 Diamon	iu Cou Liiu	
Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	1.5	0	6	0
2	1.2	1.75	4	4
3	2	0.2	4	1
4	2.6	0.1	13	1
5	5.6	0.5	24	1
6	0.8	0.05	4	1
7	2	0.05	14	1
8	1.6	0	7	0
9	3.2	0	10	0

^{*} No Data. Bad tows, or weights only recorded.

Red Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	17	18.75	106	128
2	16	19.25	126	94
3	15	16	103	74
4	27	24.5	58	123
5	24	22	68	127
6	41	27.5	168	99
7	38.5	34.75	185	124
8	41	36.5	180	159
9	34	30	163	144

^{*} No Data. Bad tows, or weights only recorded.

White Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Dour man	oo miin Oraco	and 2.0 Diamon	a Cou Lilu	
Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	10	5.25	59	32
2	8	8.25	55	39
3	7	4.6	50	28
4	5.2	3.3	26	18
5	5.8	6.5	35	35
6	13.5	9	35	22
7	10.5	3.4	55	11
8	22.5	14.5	172	53
	10.5	7.5	29	18

^{*} No Data. Bad tows, or weights only recorded.

Silver Hake Catch in Weight and Numbers between 30" Dropper Chains with Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair Control 30" D&Roller Control 30" D&Roller Weight(kg) Weight(kg) Number Number 100 98.5 1054 1123 2 125 83.25 1115 866 3 150 69.5 1673 586 4 160 93.75 1506 919 5 160 86.5 1227 1211 6 250 96.75 2500 851 360 134 3857 1206 8 360 119 2845 1023 420 117 4773 1170

^{*} No Data. Bad tows, or weights only recorded.

Table 8. Two Sets of Paired Tows 30" Raised Footrope with no Frame vs Control Footrope Down on Frame.

Both Nets with 50 mm Bar Space Grate and 2.6 Inch Diamond Mesh Cod End.

Test: 30" Raised Footrope w/ no Frame vs Control Footrope Down on Frame.

North Star = Experimental

Vessel	Date	Grate (in)	Cod End (in)	Dropper (in)	Roller Dia (in)	Tow	Begin Time	End Time	Lat/	nning Long	Lat	ind /Long	Water Temp	Depth Haul	Tow Speed	Wire Out	Total Weight (kg)	Reg. Sp. Wt. (kg)	% Reg.Sp
T	147/0004									degrees		degrees	(°F)	(fm)	(kt)	(fm)			
Tenacious 9		2	2.6	0	10	9	7:05	7:50	43.505	69.933	43.479	69.944	0.0	63.5-64.5	2.4	175.0	167.1	41.9	25.1
Tenacious 9	A CONTRACTOR OF THE PARTY OF TH	2	2.6	0	10	10	8:15	9:24	43.480	69.942	43.520	69.899	0.0	66	2.5	175.0	380.4	56.8	14.9
Tenacious 9		2	2.6	0	10	11	10:20	10:56	43.512	69.917	43.501	69.940	64.5	63-62.5	2.5	175.0	211.4	25.0	11.8
Tenacious 9		2	2.6	0	10	12	11:55	12:48	43.505	69.926	43.509	69.900	0.0	65-61	2.5	175.0	376.0	53.6	14.3
Tenacious 9		2	2.6	0	10	13	13:28	14:41	43.501	69.903	43.468	69.958	66.3	64-67.5	2.5	175.0	291.6	57.6	19.8
Tenacious 9		2	2.6	0	10	14	6:55	7:35	43.504	69.936	43.469	69.943	65.0	60-68	2.4	175.0	131.3	30.1	22.9
Tenacious 9	STATE OF STREET	2	2.6	0	10	15	8:21	9:25	43.468	69.956	43.513	69.937	65.0	63.2-67.5	2.5	175.0	212.2	55.9	26.3
Tenacious 9		2	2.6	0	10	16	10:24	11:23	42.902	69.284	43.508	69.911	63.8	63	2.7	175.0	227.0	41.0	18.1
Tenacious 9	9/18/2001	2	2.6	0	10	17	11:51	12:52	43.500	69.917	43.476	69.965	65.8	65.1-68.6	2.5	175.0	177.0	46.5	26.3
												Tenacious	2	2.6	0	10	2173.9	408.4	18.8
												I Jacobson Sandara				Mean	241.5	45.4	19.9
																Median	212.2	46.5	19.8
North Star 9		2	2.6	30	0	9	7:04	0:00	43.500	69.927	43.556	69.929	0.0	60	2.4	175.0			*
North Star 9		2	2.6	30	0	10	8:56	9:30	43.491	69.934	43.491	69.934	0.0	0	2.4	175.0	352*	53.5*	15.19*
North Star 9.	/17/2001	2	2.6	30	0	11	10:20	11:00	43.510	69.899	43,499	69.928	0.0	64-66	2.4	175.0	110.8	2.3	2.0
North Star 9	/17/2001	2	2.6	30	0	12	11:52	12:50	43.495	69.922	43.511	69.890	0.0	62-64	2.5	175.0	197.3	6.5	3.3
North Star 9	/17/2001	2	2.6	30	0	13	13:30	0:00	43.497	69.908	43,475	69.958	0.0	63-64	2.4	175.0	213.3	12.3	5.7
North Star 9	/18/2001	2	2.6	30	0	14	6:50	7:51	43,503	69.919	43,468	69.938	0.0	63-67	2.4	175.0	78.6	0.6	0.8
North Star 9	/18/2001	2	2.6	30	0	15	8:20	9:25	43,467	69.960	43,506	69.931	0.0	68-64	2.4	175.0	157.9	4.9	3.1
North Star 9	/18/2001	2	2.6	30	0	16	10:15	11:23	43.506	69.927	43.500	69.908	0.0	64-65	2.5	175.0	128.7	3.2	2.4
North Star 9	/18/2001	2	2.6	30	0	17	11:50	12:55	43.499	69.917	43.471	69.959	0.0	66-68	2.5	175.0	245.7	10.0	4.1
							100 200 200 200					North Star	2	2.6	30	0	1132.2	39.7	3.5
																Mean	161.7	5.7	3.5
												Mark Street				Median	157.9	4.9	3.1

* Net not rigged right, tow unacceptable, rerigged net.

Test: 30" Raised Footrope w/ no Frame vs Control Footrope Down on Frame. Tenacious = Experimental

Vessel	Date	Grate (in)	Cod End (in)	Dropper (in)	Roller Dia	Tow	Begin Time	End Time		nning		nd	Water	Depth	Tow	Wire		Reg. Sp. Wt.	% Reg.Sp.
		(m)	(111)	(111)	(in)		Time	Time		Long		/Long	Temp	Haul	Speed	Out	(kg)	(kg)	
Nedb Otes	010110001									degrees		I degrees	(°F)	(fm)	(kt)	(fm)			
North Star		2	2.6	0	10	27	7:20	8:15	43.603	69.891	43.619	69.859	0.0	46-36	2.4	125.0	215.8	2.2	1.0
North Star		2	2.6	0	10	28	8:49	9:35	43.609	69.860	43.580	69.884	0.0	42-47	2.4	125.0	128.0	12.6	9.9
North Star		2	2.6	0	10	29	10:05	11:05	43.583	69.884	43.618	69.864	0.0	48-46	2.4	125.0	267.4	7.6	2.9
North Star		2	2.6	0	10	30	11:19	12:03	43.609	69.860	43.591	69.898	0.0	46	2.5	125.0	142.4	9.2	6.5
North Star		2	2.6	0	10	31	12:28	13:40	43.597	69.890	43.590	69.875	0.0	47-42	2.4	125.0	60.8	11.5	18.8
North Star		2	2.6	0	10	32	7:29	8:40	43.599	69.911	43.605	69.861	0.0	43	2.4	125.0	215.9	8.5	3.9
North Star		2	2.6	0	10	33	8:54	10:14	43.605	69.865	43.616	69.873	0.0	43	2.4	125.0	186.9	8.0	4.3
North Star		2	2.6	0	10	34	10:34	11:46	43.620	69.872	43.583	69.892	0.0	46	2.4	125.0	177.0	8.9	5.0
North Star		2	2.6	0	10	35	12:01	13:05	43.584	69.890	43.623	69.868	0.0	46	2.4	125.0	233.3	4.6	2.0
North Star	10/2/2001	2	2.6	0	10	36	13:20	14:16	43.621	69.869	43.601	69,909	0.0	39	2.4	125.0	146.2	7.2	4.9
												North Star	2	2.6	0	10	1557.9	78.1	5.0
																Mean	173.1	8.7	6.5
																Median	177.0	8.5	4.9
Tenacious	9/24/2001	2	2.6	30	0	27	7:22	8:16	43.602	69.890	43.623	69,854	64.5	46-34	2.4	125.0	25.0	0.7	2.8
Tenacious	9/24/2001	2	2.6	30	0	28	8:45	9:26	43.605	69.855	43.576	69.875	62.9-64.2	0	2.7	125.0	69.8	5.4	7.7
Tenacious	9/24/2001	2	2.6	30	0	29	10:00	10:56	43.584	69.876	43,617	69.868	64.2-63.5	46-36	2.5	125.0	155.8	2.7	1.7
Tenacious	9/24/2001	2	2.6	30	0	30	11:22	12:03	43,608	69.859	43,590	69.891	64.2-64.4	40-47	2.5	125.0	49.2	0.8	1.6
Tenacious	9/24/2001	2	2.6	30	0	31	12:30	13:40	43.602	69.885	43.589	69.868	64.5-64.4	46-47	2.5	125.0	121.3	4.3	3.5
Tenacious	10/2/2001	2	2.6	30	0	32	7:36	8:38	43,602	69.907	43.607	69.859	61.8-61.5	48-46	2.5	150.0	116.3	5.1	4.4
Tenacious	10/2/2001	2	2.6	30	0	33	9:04	10:10	43.592	69.854	43.620	69.873	0.0	48-41	2.5	150.0	111.1	3.7	3.3
Tenacious	10/2/2001	2	2.6	30	0	34	10:38	11:44	43.609	69.854	43.582	69.892	61.7-60.6	42-48.5	2.7	150.0	84.8	0.7	0.9
Tenacious	10/2/2001	2	2.6	30	0	35	12:05	13:05	43.576	69.875	43.617	69.857	61.7	48	2.7	150.0	77.5		
Tenacious		2	2.6	30	0	36	13:26	14:14	43.617	69.857	43.601	69.908	62.7-62.6	40-48	2.7	150.0	29.1	0.8	1.1
				-0		00	10.20	1-1-1-1	40.017	00.007	40.001	Tenacious	2	2.6	30	0		0.2	0.7
												Toriacious	2	2.0	30		814.7	23.6	2.9
																Mean	90.5	2.6	2.8
																Median	84.8	2.7	1.7

Part	down on 10" roller fram	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	Tenacious	North Star	North Star	North Star	North Star	North Star	North Star	North Sta	r North Star	r North Sta	r North Sta	r North Star	North Sta	ar N
**************************************		Contr. 9	Contr. 10	Contr. 11	Contr. 12	Contr. 13	Contr. 14	Contr. 15	Contr. 16	Contr. 17														i Horar ota	North Ota	
Section 10	Species										Sum		Std.Dev.							Tot.Wt.			Sum		Std.Dev.	V
Mindel Manual Ma		0.0	0.0	0.0	0.0	0.0	0.2	0.1			0.3		0.057	Ny.	Ng.					0.0			0.0		0.000	
The content of the co	Whiting/Silver Hake																	190.0			115.0	210.0	970.0	138.6		
Well was a series of the control of																			00.0							
March Color Colo																										
American Después 475 - 193 - 68 184 112 68 113 68 115 68 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 115 68 68 115		0.0	0.4	0.0	0.0	0.0																				
Property Pro																										
The fine of the control of the contr																										
Viewell Biscoret Color C																										
Golden G. C.																										
## Case				0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.8	0.5	1.600													
Our Branches 10																		0.0							0.189	
Bearing Declaration Decl																										
Paris 10																										
Herming 0.0 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Shad	0.0	0.4	0.0																						
Marks NOGestaffeld A								1.0	0.0	0.0																
Month find Societies 18																		0.0	15.0	8.0	0.0	8.5	50.3	7.2	5.558	
## Service Trail ## Service T																										
Service Production 1																										
EXPENDIGNAL OR 0.0 1.1 2 0.0 0.4 4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.6 0.2 0.4466	Spiny Dog/Dogfish																									
Ministration 14									0.0	0.0	1.6	0.2	0.406													
Billes																							4.0	0.6		
Contingue Cont																										
Lossier 0.0 0.																		***		1.0						
Company Comp																										
Ress Cirels		0.0	0.0	0.0	0.0	0.0																				
Reg Species Total 41.9 58.8 26.0 58.8 57.8 59.1 59.0 41.0 48.5 48.5 48.5 48.5 48.5 48.5 48.5 48.5 48.5 41.0 48.5 4										0.0	0.0															
Byenche Control Cont		0.0	0.0													0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	
Whiteglywer Hake 121 128 128 128 141 91 25 33 38 35 738 82 48,044 39 0 36 0 35 43 39 223 36 17,000 140 140 140 140 140 140 140 140 140	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram	0.0 167.1 41.9 0.251 ow by Spee e (F/V Ten	0.0 380.4 56.8 0.149 ecies for 30 acious). Be	211.4 25.0 0.118 " raised footh nets ha	376.0 53.6 0.143 otrope with ve 50 mm l	291.6 57.6 0.198 no roller f	131.3 30.1 0.229 rame (F/V)	212.2 55.9 0.263 North Star) 2.6" diamo	227.0 41.0 0.181 vs control nd mesh c	177.0 46.5 0.263 net with fo	2173.9 408.4 0.188 potrope	241.5 45.4 0.188	89.249 11.927 0.055	Nedt Ore	North Observed	110.8 2.3 0.020	197.3 6.5 0.033	213.3 12.3 0.057	78.6 0.6 0.008	157.9 4.9 0.031	128.7 3.2 0.024	245.7 10.0 0.041	1132.2 39.7 0.035	161.7 5.7 0.035	59.975 4.225 0.016	
Whiteglisher Hake 121 128 128 128 141 91 25 33 38 35 738 82 48.94 39 0 28 60 35 43 39 282 38 17.091	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram	0.0 167.1 41.9 0.251 Tow by Spee (F/V Ten Tenacious Contr. 9	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10	211.4 25.0 0.118 " raised foo oth nets ha Tenacious Contr. 11	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12	291.6 57.6 0.198 no roller f bar space g Tenacious Contr. 13	131.3 30.1 0.229 Trame (F/V) grates and Tenacious Contr. 14	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17	2173.9 408.4 0.188 potrope	241.5 45.4 0.188	89.249 11.927 0.055	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11	197.3 6.5 0.033 North Star Exper. 12	213.3 12.3 0.057 North Star Exper. 13	78.6 0.6 0.008 North Star Exper. 14	157.9 4.9 0.031 North Star Exper. 15	128.7 3.2 0.024 North Star Exper. 16	245.7 10.0 0.041 North Star Exper. 17	1132.2 39.7 0.035	161.7 5.7 0.035	59.975 4.225 0.016 North Star	r
With Early With India 128 128 141 91 25 33 38 35 738 62 48,644 39 0 36 60 35 43 39 252 38 810 73,681 78	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram	0.0 167.1 41.9 0.251 Tow by Spee (F/V Ten Tenacious Contr. 9	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10	211.4 25.0 0.118 " raised foo oth nets ha Tenacious Contr. 11	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12	291.6 57.6 0.198 no roller f bar space g Tenacious Contr. 13	131.3 30.1 0.229 Trame (F/V) grates and Tenacious Contr. 14	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17	2173.9 408.4 0.188 potrope	241.5 45.4 0.188	89.249 11.927 0.055	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11	197.3 6.5 0.033 North Star Exper. 12	213.3 12.3 0.057 North Star Exper. 13	78.6 0.6 0.008 North Star Exper. 14	157.9 4.9 0.031 North Star Exper. 15	128.7 3.2 0.024 North Star Exper. 16	245.7 10.0 0.041 North Star Exper. 17	1132.2 39.7 0.035	161.7 5.7 0.035	59.975 4.225 0.016 North Star	
Real Make (Ling)	All Species Total Reg. Spacies Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp	0.0 167.1 41.9 0.251 Tow by Spe e (F/V Ten Tenacious Contr. 9 Tot.Num.	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10 Tot.Num.	211.4 25.0 0.118 " raised foo oth nets ha Tenacious Contr. 11 Tot.Num.	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12 Tot.Num.	291.6 57.6 0.198 In no roller f bar space g Tenacious Contr. 13 Tot.Num.	131.3 30.1 0.229 rame (F/V grates and Tenacious Contr. 14 Tot.Num.	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num.	227.0 41.0 0.181 vs control nd mesh c Tenaclous Contr. 16 Tot.Num.	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num.	2173.9 408.4 0.188 cotrope Tenacious Sum	241.5 45.4 0.188 Tenacious	89.249 11.927 0.055 Tenacious Std.Dev.	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num.	197.3 6.5 0.033 North Star Exper. 12 Tot.Num.	213.3 12.3 0.057 North Star Exper. 13 Tot.Num.	78.6 0.6 0.008 North Star Exper. 14 Tot.Num.	157.9 4.9 0.031 North Star Exper. 15 Tot.Num.	North Star Exper. 16 Tot. Num.	245.7 10.0 0.041 North Star Exper. 17 Tot.Num.	1132.2 39.7 0.035	161.7 5.7 0.035 North Star	59.975 4.225 0.016 North Star Std.Dev.	
White Hake 22 92 14 88 20 0 0 42 15 273 30 \$13.37 0 13 18 2 0 1 18 18 73 10 7180 Redfish 0 4 0 0 0 1 1 0 0 0 5 1 1.333 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratto 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake	0.0 167.1 41.9 0.251 Tow by Spe e (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10 Tot.Num.	211.4 25.0 0.118 "raised foo th nets ha Tenacious Contr. 11 Tot.Num.	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141	291.6 57.6 0.198 In no roller f bar space g Tenacious Contr. 13 Tot.Num.	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num.	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num.	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num.	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738	241.5 45.4 0.188 Tenacious Num./Tow 0 82	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39	197.3 6.5 0.033 North Star Exper. 12 Tot.Num.	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39	1132.2 39.7 0.035 r North Star Sum 0 252	161.7 5.7 0.035 North Star Num./Tow 0 36	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981	
Redfish 0 4 0 0 0 1 0 0 0 5 1 1333 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Sliver Hake EXP Whiting	0.0 167.1 41.9 0.251 Tow by Spee (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121 789	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10 Tot.Num. 0 126 2430	211.4 25.0 0.118 "raised for th nets hat Tenacious Contr. 11 Tot. Num. 0 128 1545	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841	291.6 57.6 0.198 In no roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765	rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297	net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 910	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638	1132.2 39.7 0.035 7 North Star Sum 0 252 8305	161.7 5.7 0.035 North Star Num./Tow 0 36 1186	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512	
Inferioan Plaice (Dab) 131 132 98 164 128 61 214 134 128 1211 135 37.761 13 10 25 3 7 4 27 89 13 3706 19 10 167 144 104 156 344 130 525 160 283 2033 226 138 146 6 16 19 9 0 4 0 12 57 8 7 82 80 80 80 80 80 80 80 80 80 80 80 80 80	All Species Total Reg. Species Total Bycatch Ratio B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling)	0.0 167.1 41.9 0.251 cow by Spee (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121 789 106	0.0 380.4 56.8 0.149 ecies for 30 acious). Be Tenacious Contr. 10 Tot.Num. 0 126 2430 208	211.4 25.0 0.118 "raised foo th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116	291.6 57.6 0.198 a no roller f bar space g Tenaclous Contr. 13 Tot.Num. 0 91 1765 92	rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183	177.0 48.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 910	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Ster Exper. 17 Tot.Num. 0 39 1638 42	1132.2 39.7 0.035 North Star Sum 0 252 8305 169	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710	•
ypane Flounder (Sand Dab) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish	0.0 167.1 41.9 0.251 cow by Spee e (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121 789 106 22 0	0.0 380.4 56.8 0.149 ecies for 30 lacious). But Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92	211.4 25.0 0.118 " raised for oth nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0	376.0 53.6 0.143 otrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68	291.6 57.6 0.198 In no roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20	rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158	227.0 41.0 0.181 vs control nd mesh c Tenaclous Contr. 16 Tot.Num. 0 38 1297 183 42	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 910 165	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Ster Exper. 17 Tot.Num. 0 39 1638 42	1132.2 39.7 0.035 7 North Stail Sum 0 252 8305 169 73	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185	r
Ter Flounder (Blackback) 1 0 0 0 4 0 0 0 0 0 5 1 1.333 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratto B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pilaice (Dab)	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 58.8 0.149 ecies for 30 accious). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132	211.4 25.0 0.118 " raised for th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 164	291.6 57.6 0.198 in prolier for a pace of the pace of the prolier for a pace of the	131.3 30.1 0.229 rame (F/V grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81	212.2 55.9 0.263 North Star) 2.6" diamo Tenaclous Contr. 15 Tot.Num. 0 33 1158 146 0 0 214	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134	177.0 46.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377 1.333 37.781	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0	1132.2 39.7 0.035 T North Star Sum 0 252 8305 169 73 0	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000	
Yellowfall Flounder	All Species Total Reg. Species Total Bycatch Ratio B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish wherican Plaice (Dab) y Sole (Witch Flounder)	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 58.8 0.149 ecies for 30 accious). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132	211.4 25.0 0.118 " raised for th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 164	291.6 57.6 0.198 in prolier for a pace of the pace of the prolier for a pace of the	131.3 30.1 0.229 rame (F/V grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81	212.2 55.9 0.263 North Star) 2.6" diamo Tenaclous Contr. 15 Tot.Num. 0 33 1158 146 0 0 214	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134	177.0 46.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377 1.333 31.377 1.333 136.146	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 25	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 73 0 89	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 13	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625	r
Cod 0 0 0 4 0 0 0 4 0 0 0 0 0 1 1 0 0 0 0 1 1333 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratto 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pialce (Dab) sy Sole (Witch Flounder) wypane Flounder (Sand Dab)	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 58.8 0.149 ecies for 30 accious). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132	211.4 25.0 0.118 " raised for th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 164	291.6 57.6 0.198 in prolier f bar space of Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128	131.3 30.1 0.229 rame (F/V grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81	212.2 55.9 0.263 North Star) 2.6" diamo Tenaclous Contr. 15 Tot.Num. 0 33 1158 146 0 0 214	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134	177.0 46.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377 1.333 37.781 136.146 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 25	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 73 0 89	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 13	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625	r
Haddock 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) ye Sole (Witch Flounder) wpane Flounder (Sand Dab) tter Flounder (Blackback)	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 58.8 0.149 ecies for 30 accious). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132	211.4 25.0 0.118 " raised for th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 164	291.6 57.6 0.198 in prolier f bar space of Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128	131.3 30.1 0.229 0.229 1 Grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 130 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenaclous Contr. 15 Tot.Num. 0 33 1158 146 0 0 214	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134	177.0 46.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377 1.333 37.781 136.146 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 25	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 73 0 89	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 13	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 15.710 7.185 0.000 9.708 7.625 0.000	
Gulf Streem Flounder 0 0 2 0 4 1 1 0 0 0 8 1 1.384 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Sliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) ay Sole (Witch Flounder) wpane Flounder (Blackback) Yellowkall Flounder Cod	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 56.8 0.149 ecies for 30 acious). Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 0 0	211.4 25.0 0.118 " raised for th nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 164	291.6 57.6 0.198 in prolier f bar space of Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128	131.3 30.1 0.229 0.229 1 Grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 130 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenaclous Contr. 15 Tot.Num. 0 33 1158 146 0 0 214	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134	177.0 46.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 77.158 31.377 1.383 37.781 1.386.148 0.000 1.383	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 25	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 73 0 89	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 13	59,975 4,225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000	
Sealelop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish merican Plaice (Dab) ypane Flounder (Sand Dab) ter Flounder (Blackback) Yellowtail Flounder Cod Haddock	0.0 167.1 41.9 0.251 Tow by Spee e (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131	0.0 380.4 56.8 0.149 ecies for 30 acious). Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0	211.4 (25.0 0.118 " raised for the nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0	376.0 53.6 0.143 otrope with we 50 mm Trancolous Contr. 12 Tot.Num. 0 141 2841 116 68 0 0 164 0 0 0 0 4 0 0	291.6 57.6 0.198 in no roller f bar space of Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128 344 0 4	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 130 0 0 0 1	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0	227.0 41.0 0.181 vs control od mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134 160 0 0 2	177.0 48.5 0.263 net with fc od ends. Tenacious Contr. 17 Tot.Num. 0 35 910 165 15 0 1283 0 0 0 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762.849 47.158 31.377 1.333 37.781 1.361 448 0.000 1.333 1.300 1.333	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 25	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 73 0 89	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 13	59,975 4,225 0.016 North Star Std.Dev. 0.000 17,981 432.512 15,710 0.000 9,708 7,625 0.000 0.000 0.000	
Shad 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish wherican Palace (Dab) ty Sole (Witch Flounder) yeare Flounder (Blackback) Yellowkali Flounder Cod Haddock Poliock	0.0 167.1 41.9 0.251 fow by Spee e (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121 789 106 22 0 131 187 0 1	0.0 380.4 56.8 0.149 scies for 30 acious). Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 0 0 0 0	376.0 53.6 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.141 0.141 0.164 0.164 0.0 0.0 0.0 0.0 0.0 0.141 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	291.6 57.6 0.198 in or oller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128 344 0 4 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 130 0 0 0 1	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134 160 0 0 0 0 0	177.0 48.6 0.263 net with fc od ends. Tenacious Contr. 17 Tot.Num. 0 35 16 0 128 283 0 0 0 0 0	2173.9 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1	89.249 11.927 0.055 Tenacious Std.Dev. 0.000 48.644 762.849 47.158 31.377 1.333 37.781 136.146 0.000 1.333 1.000 1.333 0.333	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 10 16 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0	157.9 4.9 0.031 North Starr Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot Num. 0 43 989 27 13 0 4 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 27 12 0 0 0	1132.2 39.7 0.035 r North State 0 252 8305 169 73 0 89 57 0 0 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 0 0	161.7 6.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0	59,975 4,225 0.016 North Star Std.Dev. 0.000 17,981 432,512 432,512 0.000 9,708 7,625 0.000 0.000 0.000 0.000 0.000 0.000	
Herring 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish merican Plaice (Dab) yeane Flounder (Backback) Yellowtali Flounder Cod Haddock Juf Stream Flounder Sulf Stream Flounder Sulf Stream Flounder	0.0 167.1 41.9 0.251 ow by Spee (F/V Ten Tenacious Contr. 9 Tot. Num. 0 121 789 106 22 0 131 187 0 1 2 0 0	0.0 380.4 66.8 0.149 0.169 0.169 0.126 0.126 2430 208 92 4 132 0 0 0 0 0	211.4 25.0 0.118 " raised fo. th nets ha Trancious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0	376.0 53.6 0.143 otrope with ve 50 mm . Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 0 0 0 4 4 0 0 0 0	291.6 57.6 0.198 in or order f bar space e Tenaclous Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 4 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 130 0 0 0 1	212.2 55.9 0.263 North Star) 2.6" diamo Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0	177.0 48.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 0 128 283 0 0 0 0 0	2173.9 408.4 0.188 corrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 0 5 6 4 1 1 1	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 1 0 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762.849 47.158 31.377 1.383 37.781 1.381 1.381 1.381 0.000 1.383 0.383 0.383	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 13 6 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 10 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 3 0 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 0 7 4 0 0 0 1 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 4 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27 12 0 0 0 0	1132.2 39.7 0.035 r North Star 0 252 8305 169 73 0 89 57 0 0 0 0	161.7 6.7 0.035 r North Star Num./Tow 0 36 1186 24 10 0 0 13 8 0 0 0	59,975 4,225 0.016 North Star Std.Dev. 0.000 17,981 432.512 15,710 7,185 0.000 9,708 7,625 0.000 0.000 0.378 0.000 0.000	
Alewife	All Species Total Reg Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Sliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish wherican Palace (Dab) ty Sole (Witch Flounder) wyane Flounder (Blackback) Yellowfail Flounder Cod Haddock Poliock Sulf Stream Flounder Scallop	0.0 167.1 41.9 0.251 ow by Spe e (FAV Ten Tenacious Contr. 9 Tot.Num. 0 121 789 106 22 0 0 131 187 0 0	0.0 380.4 56.8 0.149 ecies for 30 acious). Br Tenacious Contr. 10 Tot Num. 0 126 2430 208 92 4 132 144 0 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 2	376.0 53.6 0.143 btrope with ve 50 mm I Tenacious Contr. 12 Tot. Num. 0 141 2841 166 68 0 164 156 0 0 0 0 0 0 0	291.6 57.6 0.198 a no roller f bar space ç Tenaclous Contr. 13 Tot. Num. 0 91 1765 92 20 0 128 344 0 4 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 1 30 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0	177.0 48.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 185 16 0 0 0 0 0 0 0	2173.9 408.4 408.4 0.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1 1 8	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 0 1 135 226 0 1 0 0	89 249 11 927 0.055 Tenacious Std.Dev. 0.000 48 644 77 158 31.377 1.333 37.781 1.381 1.000 0.000 1.333 1.003 1.333 1.364 0.033	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43 13 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1388 26 18 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 3 0 0 0 0 0	157.9 4.9 0.031 North Starr Exper. 15 Tot Num. 0 35 910 21 9 0 7 4 0 0 0 0 1	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 4 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27 12 0 0 0 0	1132.2 39.7 0.035 r North Star 0 252 8305 169 73 0 0 0 0 0 0 1	161.7 6.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 0 13 8 0 0 0 0	59,975 4,225 0.016 North Star Std.Dev. 0.000 17.981 432.512 1432.512 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	
Cusk (Spotted) 0	All Species Total Reg Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake EXP Whiting Red Hake (Ling) White Hake Geffish werican Plaice (Dab) ty Sole (Witch Flounder) wysone Flounder (Sand Dab) ter Flounder (Blackback) Yellowali Flounder Cod Haddock Poliock Sulf Stream Flounder Scallop Shad Herring	0.0 167.1 41.9 0.251 ow by Spe E (F/V Ten Tenacious Contr. 9 Tot.Num. 0 121 789 106 22 0 131 187 0 1 1 2 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0	0.0 380.4 56.8 0.149 Becies for 30 acious). B: Tenacious Contr. 10 Tot Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenaclous Contr. 11 Tot. Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 0 0 0	376.0 53.6 0.143 btrope with ve 50 mm Tenaclous Contr. 12 Tot. Num. 0 141 2841 116 68 0 164 156 0 0 0 0 0 0 0	291.6 57.6 0.198 a no roller f bar space ç Tenaclous Contr. 13 Tot Num. 0 91 1765 92 20 0 128 344 0 4 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tonaclous Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 130 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot. Num. 0 38 1297 183 42 0 134 160 0 0 2 0 0 0 0 0 0	177.0 48.5 0.263 net with fc od ends. Tenaclous Contr. 17 Tot. Num. 0 35 910 165 16 0 128 283 0 0 0 0 0 0 0 0 0 0	2173.9 408.4 408.4 0.188 botrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 4 1 1 8 0 4	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 77.88 31.377 138.149 0.000 138.138.140 0.000 1.333 0.333 0.333 0.333 0.333 1.000 1.360 0.000 1.160	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 13 6 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 3 0 0 0 0 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 1 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot Num. 0 43 989 27 13 0 0 0 0 0 0 1	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 27 12 0 0 0 0 0	1132.2 39.7 0.035 r North Star Sum 0 252 8305 169 57 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	181.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0	59,975 4,225 0.016 North Star Std.Dev. 0.000 17,981 432,512 15,710 7,185 0.000 7,185 0.000 0.000 0.000 0.000 0.378 0.000 0.000 0.000 0.000 0.000 0.000 0.000	
Solublin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish wherican Plaice (Dab) ypane Flounder (Sand Dab) ter Flounder (Blackback) Yellowkall Flounder Cod Haddock Poliock Guif Stream Flounder Scallop Shad Herring Alewife	0.0	0.0 380.4 56.8 0.149 Boiles for 30 lacious). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 1322 144 0 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 0 98 104 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 0.198 a no roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 130 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0	212.9 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134 160 0 0 0 0 0 0 0 15	177.0 46.5 0.263 net with food ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 16 0 1283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2173.9 408.4 408.4 0.188 botrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1 1 8 0 4 0	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0 0 0 1	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762 849 47.158 31.377 138.146 0.000 138.149 0.000 1.333 0.330	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot Num. 0 36 1368 18 0 0 25 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot. Num. 0 60 450 10 2 0 0 0 0 0 0 0 1 2	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 0 0 1 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 27 12 0 0 0 0 0 0	1132.2 39.7 0.035 r North Stat Sum 0 252 8305 169 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 6.7 0.035 1 North Star Num./Tow 0 36 1186 24 10 0 13 8 0 0 0 0 0 0 0 0 0 0 0 0 0	59,975 4,225 0.016 North Star Std.Dev. 0.000 17.981 432.512 1432.512 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.378 0.000 0.000 0.000 0.535	
Spiny Dog/Dog/fish 0	All Species Total Reg Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Sliver Hake EXP Whiting Red Hake (Ling) White Hake EXP Whiting Red Hake EXP Whiting Red Hake EXP Whiting Red Hake EXP Whiting White Hake EXP Whiting White Hake EXP Whiting Hake EXP Whiting Scaling Shad Herring Alewife Cusk (Spotted)	0.0 167.1 41.9 0.251 6 (F/V Ten Fenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 1 2 0 0 1 1 1 0 0 0	0.0 380.4 58.8 0.149 0.149 0.149 0.149 0.169 0.169 0.169 0.17 0.126 0.126 0.126 0.130 0.00 0.00 0.00 0.00 0.00 0.00	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 0 0 0	376.0 53.6 0.143 0.143 0.143 0.149 0.141 0.141 0.141 0.141 0.166 0.164 0.0 0.0 0.0 0.0 0.0 0.0 0.0	291.6 57.6 0.198 in or oller f bar space g Tenaclous Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot Num. 0 25 544 90 0 1 1 81 130 0 0 0 1 1 0 0	212.9 55.9 0.263 North Stary 2.8" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 214 525 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenaclous Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 15 0	177.0 46.5 0.263 net with fc od ends. Tenacious Contr. 17 Tot.Num. 0 35 910 165 0 128 283 0 0 0 0 0 0 0 0 22 0	2173 9 408.4 408.4 20.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1 1 1 8 8 9 9	241.5 45.4 0.188 Tenacious Num /Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0 0 1 0 0	89 249 11 927 0.055 Tenacious Std. Dev. 0.000 48.644 762.849 47.158 31.377 138.146 0.000 1.333 0.333 1.364 0.000 1.010 0.8343 0.000 1.010 0.000 8.343 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 10 16 0 0 0 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.067 North Star Exper. 13 Tot.Num. 0 36 1388 26 18 0 0 0 0 0 0 0 0 0 0 0 3 25 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 10 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 1 25 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 27 12 0 0 0 0 1 2 53	1132.2 39.7 0.035 r North Star 0 252 8305 169 57 0 0 0 0 1 1 0 0 2 5 2 3 3 0 5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	181.7 5.7 0.035 North Star Num./Tow 0 38 1186 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.535 9.090 29.496	
EXP Dogfish 4 4 9 8 1 0.000 8 1 0.000 9 1 4 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish merican Platice (Dab) y Sole (Witch Flounder) ypane Flounder (Sand Dab) ter Flounder (Blackback) Yellowali Flounder Cod Haddock Pollock Scallop Shad Herring Alewife Alewited) Monkfish/Goosefish	0.0 167.1 41.9 0.251 0.2	0.0 380.4 56.8 0.149 Becies for 30 Bacicous). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 8	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 144 0 98 104 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 0.198 a no roller f bar space c Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128 344 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 130 0 0 0 1 10 0 0 0 1 1 0 0 0 0 1 1 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 15 0 9	177.0 46.5 0.263 net with food ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 16 0 128 283 0 0 0 0 0 0 0 0 0 0 128 165 161 161 161 161 161 161 161 161 161	2173.9 408.4 408.4 70.188 20trope Tenacious Sum 0 738 13280 1175 273 10 1175 2033 0 5 6 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0 0 4 0 8	89 249 11 927 0.055 Tenacious Std. Dev. 0.000 48.644 762.849 47.158 31.377 741 138.149 0.000 138.1333 1.003 31.000 0.333 1.004 0.000 0.001 1.014 0.000 0.001 0.004 0.000 0.001 0.004 0.000 0.001 0.004 0.000 0.000 0.001 0.004 0.000 0.00	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 10 0 0 0 0 0 0 0 1 1	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 1368 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 1 2 0 0 0 0 0 0 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 927 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27 12 0 0 0 0 1 2 53 0 1	1132.2 39.7 0.035 7 North Stat Sum 0 252 8305 169 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.378 0.000 0.535 9.090 0.000 29.496 0.000 1.113	
Butterfish 12 8 0 12 1 2 0 6 1 42 5 4975 2 15 9 1 4 6 4 41 6 4.811 0.00 0.00 0.00 0.00 0.00 0.00 0.00	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish merican Plaice (Dab) ypane Flounder (Band Dab) ter Flounder (Band Dab) ter Flounder (Band Dab) ter Flounder (Band Dab) ter Flounder (Sand Dab) ter Flounder (Band Dab)	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Tenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 1 2 0 0 1 1 0 0 0 0 0 0 8 0	0.0 380.4 56.8 0.149 Becies for 30 Bacicous). B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 8	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 0.198 a no roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot. Num. 0 25 544 90 0 1 1 130 0 0 0 1 1 0 0 0 1 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot Num. 0 33 1158 0 0 0 214 525 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 15 0 9	177.0 48.5 0.263 net with food ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0 128 283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2173.9 408.4 408.4 408.4 70.188 20.18	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 1 135 226 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762.849 47.158 0.000 1.383 3.7781 136.148 0.000 1.383 0.333 1.364 0.000 8.343 0.000 8.343 0.000 5.449 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43 13 0 10 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 25 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 0 1 2 90 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 1 25 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 0 0 0 0 0 0 0 0 0 1 2 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1132.2 39.7 0.035 r North Stat 0 252 8305 169 73 0 89 57 0 0 0 1 0 0 0 3 32 349 0 5 0 5 0	161.7 5.7 0.035 7 North Star Num./Tow 0 38 1188 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std. Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.378 0.000 0.000 0.378 0.000 0.000 0.535 0.000 0.536 0.000 0.1113 0.000	
Lolgo Squid 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish Redfish Piscale (Dab) Ly Sole (Witch Flounder) Ly Sole (Witc	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Tenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 1 2 0 0 1 1 0 0 0 0 0 0 8 0	0.0 380.4 56.8 0.149 Beciles for 30 Bacicous). Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 0.198 a no roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot. Num. 0 25 544 90 0 1 1 130 0 0 0 1 1 0 0 0 1 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot Num. 0 33 1158 0 0 0 214 525 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 15 0 9	177.0 48.5 0.263 net with food ends. Tenaclous Contr. 17 Tot.Num. 0 35 910 165 15 0 128 283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2173.9 408.4 408.4 408.4 70.188 20.18	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 1 135 226 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0	89 249 11 927 0.055 Tenacious Std. Dev. 0.000 48.644 77.26 849 47.158 31.377 782.849 1.333 1.378 1.393 1.000 1.014 0.000 1.014 0.000 1.014 0.000 1.014 0.000 1.014 0.000 0.000 1.014 0.000 0.00	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43 13 0 10 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 25 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 0 1 2 90 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 1 25 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 0 0 0 0 0 0 0 0 0 1 2 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1132.2 39.7 0.035 7 North Star 0 252 8305 169 73 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 Num./Tow 0 36 1186 124 10 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std. Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.378 0.000 0.000 0.378 0.000 0.000 0.535 0.000 0.536 0.000 0.1113 0.000	
Illex	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish merican Plaice (Dab) ypane Flounder (Band Dab) ter Flounder (Gand Dab)	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Fenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 1 2 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 380.4 56.8 0.149 Beciles for 30 Bacicous). Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 98 104 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 0.143 otrope with ve 50 mm l Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	291.6 57.6 0.198 in or roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128 344 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 0 1 1 81 1 0 0 0 0 1 1 0 0 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 0 0 0 214 525 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	177.0 48.5 0.263 net with food ends. Tenacious Contr. 17 Tot. Num. 0 35 9910 165 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2173.9 408.4 408.4 408.4 70.188 20.18	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762.849 47.158 31.377 138.146 0.000 1.333 1.000 1.333 1.000 1.333 0.333 1.000 5.449 0.000 5.449 0.000 5.449 0.000 0.441 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 1650 43 13 0 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 28 18 0 0 25 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 0 1 2 90 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 0 0 0 0 0 0 0 0 0 1 2 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1132.2 39.7 0.035 r North Stail 0 252.8305 169.73 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 7 North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 0.000 9.708 7.625 0.000 0.000 0.000 0.378 0.000 0.378 0.000 0.535 9.090 29.496 0.000 1.113 0.000 0.756	
Cotopus 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish Merican Plaice (Dab) y Sole (Witch Flounder) wpane Flounder (Sand Dab) tter Flounder (Blackback) Yellowtail Flounder Cod Haddock Policek Guiff Stream Flounder Scellop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Loligo Squild	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Fenacious Contr. 9 Tot Num. 0 121 789 106 222 0 131 187 0 1 1 2 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0	0.0 380.4 58.8 0.149 80ies for 30 acicous), Br Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 8 0 1 1 4 8 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 0.143 otrope with ve 50 mm l Tenacious Contr. 12 Tot.Num. 0 141 2841 116 68 0 0 164 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	291.6 57.6 0.198 in or roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 128 344 34 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 30 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 0 214 525 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 0 0 0 0 6 0 0 6	177.0 48.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 91 165 0 128 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0	2173.9 408.4 408.4 408.4 408.4 70.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 5 1211 2033 6 4 1 1 8 0 4 0 7 7 0 0 2 8 4 4 0 7 0 0 2 8 4 4 0	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0 0 4 0 8 0 0 1 5 0	89.249 11.927 0.055 Tenacious Std Dev. 0.000 48.644 762.849 47.158 31.377 1383.140 0.000 1.383 1.000 1.383 1.000 1.383 0.383 1.000 0.883 0.000 0.441 0.000 0.441 0.000 0.4475	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 18 0 0 25 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 1 1 2 90 0 0 0 1 1 2 91 1	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 7 4 0 0 0 0 0 1 0 0 0 4	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 0 0 0 0 6	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 27 12 0 0 0 0 1 1 2 53 0 1 0 4	1132.2 39.7 0.035 r North Stair 0 252 8305 169 73 0 80 957 0 0 0 0 0 0 0 3 2 3 4 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 124 10 0 13 8 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.00	
Johah Crab 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Bycatch Ratio BB. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) ay Sole (Witch Flounder) Aypane Flounder (Sand Dab) ter Flounder (Blackback) Yellowlail Flounder Cod Haddock Polilock Guif Stream Flounder Scaliop Shad Herring Alewife Cusk (Spotted) Monkflat/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Loligo Squild Illex	0.0 167.1 41.9 0.251 141.9 0.251 0 w by Spee 6 (F/V Ten Tenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 380.4 58.8 0.149 0.149 0.149 0.149 0.149 0.126 2430 0.126 0.141 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	211.4 25.0 0.118 " raised foo thin nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 144	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 0.198 In or roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 20 0 0 128 344 0 0 0 0 0 4 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	131.3 30.1 0.229 rame (F/V grates and Tonacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 130 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious 0 33 1158 146 0 0 214 525 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control of mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134 160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	177.0 46.5 0.263 net with fc od ends. Tenacious Contr. 17 Tot.Num. 0 35 910 185 0 128 0 0 0 0 0 0 0 166 0 0 1 1 0 0 16	2173.9 408.4 408.4 10.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 5 6 4 1 1 1 1 8 0 0 3 7 3 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 130 0 1 1 10 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1	89 249 11 927 0.055 Tenacious Std. Dev. 0.000 48 644 77 158 31 377 1.333 37.781 138.146 0.000 1.014 0.000 8.343 0.000 1.014 0.000 8.343 0.000 0.000 9.343 0.000 0.000 9.343 0.000 0.000 9.343 0.000 0.000 9.343 0.000 0.000 9.343 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0 0 15 0 17	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 1 1 2 90 0 0 0 0 1 1 2 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	157,9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 1 0 0 0 4 0 15	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 0 0 0 7	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 27 12 0 0 0 0 1 2 53 0 1 1 0 0 0 4	1132.2 39.7 0.035 r North Stai Sum 0 252 8305 169 73 0 80 957 0 0 0 0 1 0 0 3 32 349 0 5 0 0 2 0 41 0 73	181.7 5.7 0.035 Num./Tow 0 36 1186 124 10 0 13 8 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000	
RockCrab 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	All Species Total Reg. Species Total Byeatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Oab) ay Sole (Witch Flounder) wpane Flounder (Sand Dab) ther Flounder (Blackback) Yellowdall Flounder) Cod Haddock Pollock Guiff Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Soosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Loligo Squid Illex Octopus	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Fenacious Contr. 9 Tot.Num. 0 121 789 106 22 0 131 187 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0	0.0 380.4 58.8 0.149 80ies for 30 acicous), B: Tenacious Contr. 10 Tot.Num. 0 126 2430 208 92 4 132 144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 144 0 0	376.0 53.6 0.143 otrope with ve 50 mm l Tenacious Contr. 12 Tot. Num. 0 141 2841 1116 68 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	291.6 57.6 57.6 57.6 57.6 57.6 57.6 57.6 57	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot. Num. 0 25 544 90 0 1 1 81 130 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 0 214 525 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 910 165 16 0 0 128 283 0 0 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 1 0	2173.9 408.4 408.4 408.4 10.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1 1 8 0 4 0 7 0 0 2 8 4 2 0 102 0	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 226 0 1 1 0 0 0 1 5 0 0 1 1 5 0 1 1 5 0 1 1 1 5 0 1 1 1 5 0 1 1 1 5 0 1 1 1 1	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 77.62 849 47.158 31.377 138.146 0.000 138.148 0.000 1.333 0.330 0.333 0.333 0.333 0.333 0.333 0.333 0.333 0.333 0.333 0.333 0.3	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot. Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0 15 0 0 15 0 17 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 96 1368 26 18 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 3 0 0 0 0 1 2 90 0 0 2 1 2 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	157.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0	128.7 3.2 0.024 North Star Exper. 16 Tot Num. 0 43 989 27 13 0 0 0 0 0 0 0 0 0 0 0 0 7 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 18 0 0 27 12 0 0 0 1 1 2 53 0 1 0 0 1 1 1 0 0 1 1 1 0	1132.2 39.7 0.035 r North Stail Sum 0 252 8305 169 73 0 0 0 0 1 0 0 0 3 32 349 0 5 0 0 2 1 0 73 0 0 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 r North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std. Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.378 0.000 0.000 0.535 9.090 29.496 0.000 0.756 4.811 0.000 5.827 0.000	
All Consign Tatal 1259 2022 1952 2420 2425 252 2524 1010 1024	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) ay Sole (Witch Flounder) Wpane Flounder (Sand Dab) teter Flounder (Blackback) Yellowkall Flounder Cod Haddock Pollock Gulf Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Montfish/Goosefish Sculpin Spiny Log/Dogfish EXP Dogfish Butterfish Loligo Squild Illex Octopus Lobster	0.0 167.1 41.9 0.251 60w by Spee 6 (F/V Ten Tenacious Contr. 9 Tot Num. 0 121 789 106 22 0 131 187 0 1 1 0 0 0 0 0 0 0 12 0 0 0 0 0 0 0 0	0.0 380.4 58.8 0.149 0.149 0.149 0.149 0.140 0.126 2430 0.126 2430 0.126 0.132 0.144 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	211.4 25.0 0.118 * raised for the harmonic for the harmo	376.0 53.6 0.143 btrope with ve 50 mm l Tenacious Contr. 12 Tot.Num. 0 141 116 08 68 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	291.6 57.6 0.198 In or roller f bar space g Tenacious Contr. 13 Tot.Num. 0 91 1765 92 0 0 128 344 0 0 0 0 0 0 4 0 0 0 0 1 0 0 0 1 0 0 0 0	131.3 30.1 0.229 rame (F/V grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 0 1 1 130 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 214 525 0 0 0 1 0 0 0 0 0 0	227.0 41.0 41.0 0.181 vs control mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 134 160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	177.0 46.5 0.263 net with fc od ends. Tenacious Contr. 17 Tot.Num. 0 35 910 185 0 128 283 0 0 0 0 0 0 0 1 1 0 0 0 1 0 0 0 0 0 0	2173 9 408.4 408.4 408.4 408.6 Tenacious Sum 0 738 13280 1175 273 5 1211 2033 0 5 6 4 1 1 8 0 0 7 0 0 2 8 42 0 102 0 0	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 0 1 135 226 0 1 1 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0	89 249 11 927 0.055 Tenacious Std.Dev. 0.000 48 644 77 158 31 377 1.333 37.781 138.148 0.000 1.014 0.000 8.343 0.033 1.364 0.000 0.000 8.343 0.000 1.014 0.000 8.441 0.000 9.441 0.000 0.441 0.000 0.441 0.000 0.441 0.000 0.441 0.000 0.000	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot.Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 10 16 0 0 0 0 0 17 0 0 15 0 17 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 36 1368 26 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 2 0 0 0 0 0 1 1 2 90 0 0 0 0 1 2 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	157.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 7 4 0 0 0 0 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 4 0 0 0 0 0 0 0 7 0 0 0 0 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 0 27 12 0 0 0 1 1 2 53 0 0 1 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0	1132.2 39.7 0.035 r North Stan 0 252 8305 169 73 0 89 89 67 0 0 0 1 0 0 3 32 349 0 5 0 0 73 0 0 73 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.025 0.000	
All Species Total 1258 3/32 1853 3/429 2/4/5 853 2/051 1849 1543 18274 2/030 820.361 1389 1834 1509 564 1/022 1/072 1809 9/199 1314 459.227	All Species Total Reg. Species Total Bycatch Ratio 9B. Catch in Numbers per T down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) y Sole (Witch Flounder) ypane Flounder (Sand Dab) ter Flounder (Blackback) Yellowtall Flounder Cod Haddock Pollock Gulf Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Liligo Squid Illex Octopus Löbster Jonah Crab	0.0 167.1 41.9 0.251 41.9 0.251 6 (F/V Ten Fenacious Contr. 9 Tot.Num. 0 121 789 106 22 0 131 187 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0	0.0 380.4 58.8 0.149 0.149 0.149 0.149 0.169 0.169 0.169 0.126 2430 208 92 4 132 2144 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	211.4 25.0 0.118 " raised footh nets ha Tenacious Contr. 11 Tot.Num. 0 128 1545 70 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	376.0 53.6 53.6 53.6 53.6 53.6 53.6 53.6 53.6	291.6 57.6 57.6 57.6 57.6 57.6 57.6 57.6 57	131.3 30.1 0.229 rame (F/V) grates and Tenacious Contr. 14 Tot.Num. 0 25 544 90 0 1 1 81 130 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0	212.2 55.9 0.263 North Star) 2.6" diamo Tenacious Contr. 15 Tot.Num. 0 33 1158 146 0 0 0 146 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	227.0 41.0 0.181 vs control nd mesh c Tenacious Contr. 16 Tot.Num. 0 38 1297 183 42 0 0 134 160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	177.0 46.5 0.263 net with food ends. Tenacious Contr. 17 Tot.Num. 0 35 910 165 16 0 0 128 283 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10	2173.9 408.4 408.4 408.4 10.188 cotrope Tenacious Sum 0 738 13280 1175 273 5 1211 1 8 0 4 0 737 0 0 2 8 4 1 0 0 0 0 0 0 0	241.5 45.4 0.188 Tenacious Num./Tow 0 82 1476 131 30 1 135 0 0 1 1 0 0 0 1 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 1 0	89 249 11 927 0.055 Tenacious Std Dev. 0.000 48.644 762 849 47.158 31.377 138.146 0.000 138.148 0.000 0	Exper. 9	Exper. 10	110.8 2.3 0.020 North Star Exper. 11 Tot Num. 0 39 1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197.3 6.5 0.033 North Star Exper. 12 Tot.Num. 0 0 1650 43 13 0 0 0 0 0 0 0 0 15 0 0 17 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	213.3 12.3 0.057 North Star Exper. 13 Tot.Num. 0 96 1388 26 18 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.6 0.6 0.008 North Star Exper. 14 Tot.Num. 0 60 450 10 2 0 0 0 0 0 1 2 0 0 0 0 0 0 0 0 0 0	157.9 4.9 0.031 North Star Exper. 15 Tot.Num. 0 35 910 21 9 0 7 4 0 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0	128.7 3.2 0.024 North Star Exper. 16 Tot.Num. 0 43 989 27 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	245.7 10.0 0.041 North Star Exper. 17 Tot.Num. 0 39 1638 42 0 27 12 0 0 0 1 1 2 53 0 0 1 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0	1132.2 39.7 0.035 r North Stail Sum 0 252 8305 169 73 0 0 0 0 1 0 0 0 3 32 349 0 5 0 0 2 1 0 0 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	161.7 5.7 0.035 7 North Star Num./Tow 0 36 1186 24 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	59.975 4.225 0.016 North Star Std.Dev. 0.000 17.981 432.512 15.710 7.185 0.000 9.708 7.625 0.000 0.000 0.000 0.000 0.535 9.090 0.1113 0.000 0.756 4.811 0.000 0.5827 0.000 0.000 0.000 0.000 0.000 0.000 0.000	

Table 10. Mean Catch (kg) Per Hour Tow by Species for Two Trials: 30" Dropper Chain with No Roller Frame vs Control Net with Footrope Down on 10" Roller Frame. Both with 50 mm Bar Space Grate and 2.6" Diamond Cod End. Paired Tows.

Dai Opuoc Oraco ana 2.0		al 1	alled 101		al 2
		Tenacious		Tenacious	
Dropper Chain Length	30	0		30	0
Roller Frame Diameter	0	10		0	10
Number of Tows	N = 7	N = 7		N = 10	
Nullibel of Tows	14 - 7	14 - 7		N = 10	N = 10
Shrimp	0.0	0.0		0.0	0.0
Whiting/Silver Hake	139.6	122.1		70.8	0.0
Red Hake (Ling)	6.8	27.9			122.5
White Hake	3.6			2.6	13.9
Redfish	0.0	6.9		1.6	4.4
American Plaice (Dab)		0.0		0.0	0.0
	1.2	9.6		0.7	3.0
Gray Sole (Witch Flounder)	8.0	20.0		0.0	0.0
Windowpane Flounder (Sand Dab)	0.0	0.0		0.0	0.0
Winter Flounder (Blackback)	0.0	0.0		0.1	0.3
Yellowtail Flounder	0.0	0.0		0.1	0.1
Cod	0.0	0.6		0.0	0.0
Haddock	0.1	0.0		0.1	0.0
Pollock	0.0	0.0		0.0	0.0
Scallop	0.0	0.1		0.3	3.8
Ocean Pout	0.0	0.1		0.0	0.1
Mackeral	0.0	0.1		0.1	0.2
Herring	1.7	0.2		8.2	6.3
Alewife	7.2	3.2		0.2	0.3
Cusk (Spotted)	0.0	0.0		0.0	0.0
Monkfish/Goosefish	0.2	1.7		0.2	2.5
Sculpin	0.0	0.0		0.6	3.4
Spiny Dog/Dogfish	0.0	0.0		0.0	0.0
Butterfish	0.6	0.4		0.3	0.1
Loligo Squid	0.0	0.0		0.0	0.0
Illex	1.1	2.1		1.0	0.7
Octopus	0.0	0.0		0.0	0.0
Lobster	0.0	0.0		2.5	9.6
Jonah Crab	0.0	0.0		0.0	0.4
Rock Crab	0.0	0.0		0.1	0.0
All Species Total	162.9	195.2		89.3	171.6
Reg. Species Total	5.7	37.2		2.6	7.8
Percent Reg. Sp. Bycatch	3.5	19.0		2.9	4.5

Table 11. Catch in Weight and Number by Paired Tow for Selected Species for 30 Inch Raised Footrope with No Roller Frame Net (F/V North Star) and for Control Net with Footrope Down on 10 Inch Frame (F/V Tenacious).

Both Nets Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

American Plaice Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&NoRoller	Control	30" D&NoRoller
	Weight(kg)	Weight(kg)	Number	Number
1	12	0*	131	0*
2	13.2	7.25	132	68
3	9.6	1	98	13
4	15.6	1.25	164	10
5	11.2	2.75	128	25
6	6.5	0.1	81	3
7	14.25	0.5	214	7
8	10.75	0.15	134	4
9	12.25	2.5	128	27
			100	

^{*} No Data. Bad tows, or weights only recorded.

Red Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	27.5	0*	0	0
2	48	30	208	186
3	17.2	0	70	0
4	31.2	10.25	116	43
5	26	8.25	92	26
6	26.5	2.5	90	10
7	38.75	5	0	21
8	61	6	183	27
9	32	15	165	42

^{*} No Data. Bad tows, or weights only recorded.

Grey Sole Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&NoRoller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	20	0*	187	0*
2	15.2	33	144	330
3	11.4	1.25	104	6
4	15.6	0.5	156	16
5	38	2.25	344	19
6	14.5	0	130	0
7	41.5	0.4	525	4
8	16	0	160	0
9	29.5	1.5	283	12

^{*} No Data. Bad tows, or weights only recorded.

Monkfish Catch in Weight and Numbers between 30" Dropper

Both with 50 mm Grate and 2.6" Diamond Cod End

Chains with No Roller Frame and Control with Footrope on Frame

White Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	8.7	0	22	0
2	28	13.25	92	34
3	4	0	14	0
4	17.6	4.75	68	13
5	8	7.25	20	18
6	9	0.5	0	2
7	0	3.5	0	9
8	14	3	42	13
9	4.75	6	15	18
	* No Data. I	Bad tows, or weigh	nts only record	led.

Silver Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame

Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control Weight(kg)	30" D&Roller Weight(kg)	Control Number	30" D&Roller Number
1	1.8	0	8	0
2	0.4	2.5	8	9
3	2.4	0.5	6	3
4	4	0.25	16	1
5	0.4	0	4	0
6	0.7	0	3	0
7	1.75	0	0	0
8	2.25	0	9	0
	2.25	0.4	16	1
	* No Data	Rad tows or weights	only recorded	

^{*} No Data. Bad tows, or weights only recorded.

Tow Pair Control 30" D&Roller Control 30" D&Roller Weight(kg) Weight(kg) Number Number 67.5 110.5 119.5

^{*} No Data. Bad tows, or weights only recorded.

able 12A. Catch in Weight per To down on 10" roller fram	ne (F/V Nort	th Star). B	oth nets ha											manufacture on the specimen									ACAD STREET, S			
					North Star No Contr. 31 Co						North Star	North Star	North Star									us Tenacious 4 Exper. 35		Tenacious	enacious	s l'enacio
Species	Tot. Wt.		Tot. Wt.		Tot. Wt. To	ot. Wt. To		Tot. Wt.	Tot. Wt.	Tot. Wt.	Sum	Wt./Tow	Std.Dev.	Tot.Wt.	Tot.Wt.	Tot.Wt.	Tot.Wt.	Tot.Wt.	Tot.Wt.	Tot.Wt.	Tot.Wt.		Tot.Wt.	Sum	Wt./Tow	Std.De
	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.		kg		kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.	kg.		kg	0.00
Shrimp	0.0	0.0	0.0	0.0			0.0	0.0 140.0	200.0	0.0 100.0	0.0 1266.0	0.0 140.7	0.000 46.859	0.0 15.5	0.0 49.5	0.0 97.5	0.0 40.0	0.0 105.0	0.0 97.0	0.0 99.0	0.0 69.9	0.0 66.0	0.0 26.0	0.0 665.4	0.0 66.5	0.000
Whiting/Silver Hake EXP Whiting	140.0 140.0	67.0 67.0	200.0	94.0 94.0			150.0 150.0	140.0	200.0	100.0	1266.0	140.7	46.859	15.5	49.5	97.5	40.0	105.0	97.0	99.0	69.9	66.0	26.0	665.4	66.5	32.78
Red Hake (Ling)	28.0	15.0	23.8	14.0			10.5	11.5	5.0	9.0	127.3	14.1	7.320	0.4	5.0	3.5	1.1	4.3	4.8	2.6	1.7	0.7	0.1	24.2	2.4	1.878
White Hake	1.6	7.0	5.0	7.0		4.5	4.0	4.5	2.5	2.5	38.6	4.3	1.904	0.0	3.5	1.8	0.7	3.2	3.8	1.6	0.2	0.5	0.0	15.3	1.5	1.49
Redfish	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0 2.9	0.010	0.0	0.0	0.0	0.0	0.0	0.0 1.0	0.0 2.0	0.0	0.0	0.0	0.0 6.5	0.0	0.00
American Plaice (Dab) Gray Sole (Witch Flounder)	0.6	5.6	2.5 0.0	0.0		3.8 0.0	3.2 0.1	4.2 0.0	2.0 0.1	2.6 0.1	26.5 0.4	0.0	0.046	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.02
ndowpane Flounder (Sand Dab)	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Winter Flounder (Blackback)	0.0	0.0	0.0	0.2		0.0	0.5	0.0	0.0	2.0	2.7	0.3	0.658	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.7	0.1	0.16
Yellowtail Flounder	0.0	0.0	0.1	0.0			0.1	0.2	0.0	0.0	0.6	0.1	0.087	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.10
Cod	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.31
Haddock Pollock	0.0	0.0	0.0	0.0			0.1	0.0	0.0	0.0	0.1	0.0	0.033	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.02
Gulf Stream Flounder	0.0	3.2	3.3	4.5			2.4	3.4	4.2	7.6	31.4	3.5	2.013	0.0	0.0	0.0	0.3	1.1	0.5	0.1	0.5	0.0	0.0	2.5	0.3	0.36
Scallop	0.0	0.0	0.1	0.0			0.3	0.0	0.1	0.4	1.0	0.1	0.142	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.09
Shad	1.4	0.2	0.2	0.1			0.0	0.0	0.0	0.0	1.9	0.2	0.454	0.5	0.1	0.0	0.4	0.0	0.1	0.0	0.0 7.0	0.0 5.1	0.0 1.4	1.1 77.0	0.1 7.7	0.18
Herring	24.0	19.0	14.8	4.2 0.2			0.0	1.2 0.2	1.8	0.4	65.4 2.7	7.3	9.371 0.305	7.5 0.1	7.0 0.0	46.0 0.3	2.5 0.1	0.4	0.0	0.1	0.8	0.1	0.3	1.9	0.2	0.24
Alewife Cusk (Spotted)	0.0	0.0	0.2	0.2			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monkfish/Goosefish	1.8	1.3	5.3	1.2			3.0	1.8	1.2	6.5	25.5	2.8	1.919	0.0	0.1	1.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	1.7	0.2	0.3
Sculpin	1.3	2.5	4.3	3.0		4.0	1.4	3.6	4.4	2.5	27.0	3.0	1.164	0.0	0.4	0.9	0.0	0.9	2.1	0.6	0.4	0.3	0.0	5.6	0.6	0.6
Spiny Dog/Dogfish	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4	0.0	0.0
EXP Dogfish	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0 1.4	0.0	0.000	0.0	0.1	0.4	0.1	0.4	0.3	0.4	0.2	0.5	0.0	2.4	0.2	0.1
Butterfish Loligo Squid	0.2	0.1	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Illex	1.6	0.0	0.0	1.2			0.2	0.8	1.2	0.8	7.0	0.8	0.584	0.3	0.5	1.6	1.0	0.6	1.0	1.4	0.9	1.5	0.4	9.2	0.9	0.4
Octopus	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lobster	15.3	7.0	6.8	10.5			10.5	5.5	9.6	11.0	86.3 1.3	9.6	2.906 0.417	0.0	1.8	1.9 0.0	3.0 0.0	4.0 0.0	4.5 0.0	2.8	0.0	2.4 0.0	0.3	23.1	2.3 0.0	0.0
						0.0	0.0	0.0					0.417			0.0	0.0			0.0			0.0		0.0	0.0
Jonah Crab	0.0	0.0	1.3	0.0			0.0	0.0			0.0	0.0	0.000	0.0										0.6		
Jonah Crab Rock Crab	0.0	0.0	0.0	0.0		0.0	0.0 186.9	0.0 177.0	0.0 233.3	0.0 146.2	0.0 1712.9	0.0 190.3	0.000 46.655	0.0 25.0	0.0 69.8	155.8	49.2	0.0 121.3	0.3 116.3	111.1	0.0 84.8	0.0 77.5	29.1	0.6 839.7	84.0	
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North	0.0 128.0 12.6 0.099 eccles for 3	0.0 267.4 7.6 0.029 80" raised f	0.0 142.4 9.2 0.065 ootrope wi	th no roller fr	0.0 215.9 8.5 0.039 (ame (F/V Tates and 2.	186.9 8.0 0.043 Tenaciou .6" diame	177.0 8.9 0.050 is) vs cont ond mesh	233.3 4.6 0.020 rol net wit cod ends.	146.2 7.2 0.049 h footrope	1712.9 68.9 0.040	190.3 7.7 0.040	46.655 2.934 0.026	25.0 0.7 0.028	69.8 5.4 0.077	155.8 2.7 0.017	49.2 0.8 0.016	121.3 4.3 0.035	116.3 5.1 0.044	111.1 3.7 0.033	84.8 0.7 0.009	77.5 0.8 0.011	29.1 0.2 0.007	839.7 24.3 0.029	84.0 2.4 0.029	42.5 2.01 0.02
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio Jet 12B. Catch in Numbers per down on 10" roller fram	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27	0.0 128.0 12.6 0.099 eccles for 3 th Star). B North Star Contr. 28	0.0 267.4 7.6 0.029 80" raised footh nets ha North Star Contr. 29	0.0 142.4 9.2 0.065 cotrope wi ive 50 mm North Star Contr. 30	th no roller fr bar space gra North Star No Contr. 31 Co	0.0 215.9 8.5 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039	8.0 0.043 Tenaciou .6" diame orth Star I	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35	146.2 7.2 0.049 h footrope North Star Contr. 36	1712.9 68.9 0.040 North Star	190.3 7.7 0.040 North Star	46.655 2.934 0.026 North Star	25.0 0.7 0.028 Tenacious Exper. 27	69.8 5.4 0.077 Tenacious Exper. 28	155.8 2.7 0.017 Tenacious Exper. 29	49.2 0.8 0.016 Tenacious Exper. 30	121.3 4.3 0.035 Tenacious Exper. 31	116.3 5.1 0.044 Tenacious Exper. 32	111.1 3.7 0.033 Tenacious Exper. 33	84.8 0.7 0.009 Tenaciou Exper. 3	77.5 0.8 0.011 us Tenacious 4 Exper. 35	29.1 0.2 0.007 Tenacious Exper. 36	839.7 24.3 0.029 Tenacious	84.0 2.4 0.029	42.52 2.01 0.02 s Tenaci
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27 Tot.Num.	0.0 128.0 12.6 0.099 secies for : th Star). B North Star Contr. 28 Tot.Num.	0.0 267.4 7,6 0.029 80" raised f ooth nets ha North Star Contr. 29 Tot.Num.	0.0 142.4 9.2 0.065 cootrope wine 50 mm North Star Contr. 30 Tot.Num.	th no roller fr bar space gra	0.0 215.9 8.5 0.039 (ame (F/V T tates and 2. rth Star No intr. 32 Cc t.Num. To	186.9 8.0 0.043 Tenaciou .6" diame orth Star I ontr. 33 ot. Num.	177.0 8.9 0.050 us) vs cont ond mesh North Star Contr. 34 Tot.Num.	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num.	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num.	1712.9 68.9 0.040 North Star	190.3 7.7 0.040 North Star Num./Tow	46.655 2.934 0.026 North Star Std.Dev.	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num.	69.8 5.4 0.077 Tenacious Exper. 28	155.8 2.7 0.017 Tenacious Exper. 29	49.2 0.8 0.016 Tenacious Exper. 30	121.3 4.3 0.035 Tenacious Exper. 31	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num.	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num.	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num.	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num.	839.7 24.3 0.029 Tenacious Sum	84.0 2.4 0.029 s Tenacious Num./Tow	42.5 2.01 0.02 s Tenac
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27 Tot.Num.	0.0 128.0 12.6 0.099 secies for : th Star). B North Star Contr. 28 Tot.Num.	0.0 267.4 7.6 0.029 80" raised f ooth nets ha North Star Contr. 29 Tot.Num.	0.0 142.4 9.2 0.065 cootrope wi vve 50 mm North Star Contr. 30 Tot. Num.	th no roller fr bar space gra North Star No Contr. 31 Co	0.0 215.9 8.5 0.039 (ame (F/V T attes and 2. rth Star No ontr. 32 Cd t.Num. To	186.9 8.0 0.043 Tenaciou .6" diame orth Star I ontr. 33 ot. Num.	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num.	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num.	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num.	1712.9 68.9 0.040 North Star Sum	190.3 7.7 0.040 North Star Num./Tow	46.655 2.934 0.026 North Star Std.Dev. 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num.	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num.	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num.	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num.	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num.	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num.	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num	77.5 0.8 0.011 us Tenacious 4 Exper. 35 n. Tot.Num.	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num.	839.7 24.3 0.029 Tenacious Sum 0	84.0 2.4 0.029 s Tenacious Num./Tow	42.5 2.0 0.0 5 Tenac V Std.L
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27 Tot.Num.	0.0 128.0 12.6 0.099 secies for 3 th Star). B North Star Contr. 28 Tot.Num.	0.0 267.4 7.6 0.029 80" raised footh nets ha North Star Contr. 29 Tot.Num.	0.0 142.4 9.2 0.065 cootrope will ve 50 mm North Star Contr. 30 Tot.Num.	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 215.9 8.5 8.5 0.039 (Came (F/V Tates and 2.7th Star No.7th Star No.7th Star No.7th	8.0 0.043 Tenaciou .6" diame orth Star I ontr. 33 ot.Num.	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num.	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62	1712.9 68.9 0.040 North Star Sum 0 493	190.3 7.7 0.040 North Star Num./Tow 0 55	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55	77.5 0.8 0.011 us Tenacious 4 Exper. 35 5. Tot.Num. 0 52	29.1 0.2 0.007 S Tenacious Exper. 36 Tot.Num. 0 81	839.7 24.3 0.029 Tenacious Sum 0 585	84.0 2.4 0.029 s Tenacious Num./Tow 0 59	42.5 2.0 0.0 s Tenad v Std.I
Jonah Crab Rock Crab Ail Species Total Reg. Species Total Bycatch Ratio Let 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot.Num. 0 45 1500	0.0 128.0 12.6 0.099 secies for 3 th Star). B North Star Contr. 28 Tot.Num. 0 44 737	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num.	0.0 142.4 9.2 0.065 cootrope wi vve 50 mm North Star Contr. 30 Tot. Num.	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 215.9 8.5 8.5 0.039 (Came (F/V Tates and 2.7th Star No.7th Star No.7th Star No.7th	186.9 8.0 0.043 Tenaciou .6" diame orth Star I ontr. 33 ot. Num.	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num.	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num.	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num.	1712.9 68.9 0.040 North Star Sum	190.3 7.7 0.040 North Star Num./Tow	46.655 2.934 0.026 North Star Std.Dev. 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num.	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num.	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num.	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num.	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num.	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num.	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num	77.5 0.8 0.011 us Tenacious 4 Exper. 35 n. Tot.Num.	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num.	839.7 24.3 0.029 Tenacious Sum 0	84.0 2.4 0.029 s Tenacious Num./Tow	42.5 2.0 0.0 s Tenac v Std.L 0.0 8.9 362.
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27 Tot.Num.	0.0 128.0 12.6 0.099 secies for 3 th Star). B North Star Contr. 28 Tot.Num.	0.0 267.4 7.6 0.029 80" raised footh nets ha North Star Contr. 29 Tot.Num.	0.0 142.4 9.2 0.065 cotrope wieve 50 mm North Star Contr. 30 Tot.Num.	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 215.9 8.5 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.039	8.0 0.043 Tenaciou .6" diame ontr. 33 ot.Num. 0 55	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192	1712.9 68.9 0.040 North Star Sum 0 493 14043	190.3 7.7 0.040 North Star Num./Tow 0 55 1560	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.5 2.0 0.0 5 Tenac V Std.L 0.0 8.9 362. 11.3
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0	0.0 128.0 0.099 0.099 eccles for 3 th Star). B North Star Contr. 28 Tot Num. 0 44 737 49 38	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0	0.0 142.4 9.2 0.065 00trope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.5 2.0 0.0 s Tenac v Std.L 0.0 8.9 362. 11.3
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Siliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Palice (Dab)	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/V North North Star Contr. 27 Tot.Num. 0 45 1500 140	0.0 128.0 12.6 0.099 eccles for 3 th Star). E North Star Contr. 28 Tot. Num. 0 44 737 49	0.0 267.4 7.6 0.029 80" raised f ooth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21	0.0 142.4 9.2 0.065 cootrope wine 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 215.9 8.5 0.039 0 ame (F/V T attes and 2. 7th Star No ontr. 32 Co t.Num. To 0 64 2074 59 26	186.9 8.0 0.043 Tenaciou .6" diamorth Star I ontr. 33 ot. Num. 0 55 1473 63	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.5 2.0 0.0 s Tena v Std.1 0.0 8.9 362. 11.3 8.4 0.0 4.2
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio le 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake American Pialce (Dab) Gray Sole (Witch Flounder)	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0	0.0 128.0 0.099 0.099 eccles for 3 th Star). B North Star Contr. 28 Tot Num. 0 44 737 49 38	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0	0.0 142.4 9.2 0.065 00trope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801 1.236	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.5 2.0 0.0 s Tenas v Std.1 0.0 8.9 362. 11.3 8.4 0.0 4.2 1.2
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Siliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Sand Dab)	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0	0.0 128.0 0.099 0.099 eccles for 3 th Star). B North Star Contr. 28 Tot Num. 0 44 737 49 38	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0	0.0 142.4 9.2 0.065 00trope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46:655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 0.333 14.801 1.236 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.1 2.0 0.0 s Tena v Std.1 0.0 8.9 362 11.1 8.4 0.0 4.2 1.0 0.4
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Piaice (Dab) 3ray Sole (Witch Flounder) dowpane Filounder (Sand Dab)	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0	0.0 128.0 0.099 0.099 eccles for 3 th Star). B North Star Contr. 28 Tot Num. 0 44 737 49 38	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0	0.0 142.4 9.2 0.065 00trope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46 655 2.934 0.026 North Star Std.Dev. 0.000 14.226 582 842 39.449 7.159 0.333 14.801 1.236 0.000 1.716 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 0 1	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42.1 2.0 0.0 5 Tena v Std.1 0.0 8.9 362 11.1 8.4 0.0 4.2 1.2 0.0 0.4
Jonah Crab Rock Crab Ail Species Total Reg. Species Total Bycatch Ratio 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) 3rg Solie (Witch Flounder) dowpane Flounder (Sand Dab) inter Flounder (Blackback) Yellowall Flounder Cod	0.0 215.8 2.2 0.010 r Tow by Sp ne (F/N North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0	0.0 128.0 0.099 0.099 eccles for 3 th Star). B North Star Contr. 28 Tot Num. 0 44 737 49 38	0.0 267.4 7,6 0.029 80" raised f oth nets ha North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0	0.0 142.4 9.2 0.065 00trope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46:655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 0.333 14.801 1.236 0.000 1.716 0.527 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42. 2.0 0.0 8 Tena v Std. 0.0 8.9 362 11. 8.4 0.0 4.2 1.2 0.0 0.4
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pilaice (Dab) 3rey Sole (Witch Flounder) dowpane Flounder (Backback) Yellowlani Flounder Yellowlani Flounder Cod Haddock	0.0 215.8 2.2 0.010 by Spee (F/V North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0 0 0 0 1 1 0	0.0 128.0 128.0 0.099 12.6 0.099 12.6 0.099 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f ooth nets hi North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1	0.0 142.4 9.2 0.065 cotrope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 27 3 0 1 0 0 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 19 19 19 19 19 19 19 19 19 19 19 19 19	186.9 8.0 0.043 Tenaciou .6" diamerth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 5 1	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0 46 0 0 1	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 13 0 111 4 0 0	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 35 1 0 0	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 562.849 7.159 0.333 14.801 1.236 0.000 1.716 0.527 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot Num. 0 61 189 3 0 0 0 1 1 0 0	69.8 6.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 9 0 0 0 1	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 11 1 1 0 0 1	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 0 0 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 111 4 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 2 0 8 1 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot.Num. 0 52 763	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758	42. 2.0 0.0 0.0 s Tena s Tena s Tena s Tena s Tena s Tena s 362 11. 8.4 0.0 0.0 0.4 0.0 0.0 0.0 0.0 0.0 0.0 0
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio s 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pilaice (Dab) 3ray Sole (Witch Flounder) dowpaner Flounder (Sand Dab) inter Flounder (Blackback) Yellowali Flounder Cod Haddock Pollock	0.0 215.8 2.2 0.010 T Tow by Sp. ne (F/V North North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 128.0 0.099 secles for it ht Start. E North Star Contr. 28 Tot Num. 0 44 737 49 38 1 1 69 2 0 0 0	0.0 267.4 7.6 0.029 80" raised f 0.029 80" raised f 0.029 80" raised f 0.021 70th nets his North Star Contr. 29 Tot. Num. 0 37 1741 143 21 0 29 2 0 1 1 0 0 0 0 0 0 0	0.0 142.4 9.2 0.065 0otrope Wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18 0 27 3 0 1 0 0 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 1 8.5 1.0 29 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou .6" diamonth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13 0 11 4 0 0 3	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0	46:655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 0.333 14.801 1.236 0.000 1.716 0.527 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 0 1	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 11 2 0 0 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 5 3 0 5 1 0 0 0	29.1 0.2 0.007	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 2 2 2	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 14 9 0 7 1 0 0 0	42.00.00 s Tena s Tena 0.00 s.8.9.3622 11.1.8.4.40.00 0.4.2.1.2.00.00.4.0.00 0.4.00.00 0.3.00.4.00 0.3.00.4.00 0.3.00 0.4.00 0.2
Jonah Crab Rock Crab All Species Total Reg. Species Total Byoatch Ratio a 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pialce (Dab) 3ray Sole (Wutch Flounder) dowpane Flounder (Blackback) Yellowtail Flounder (Sand Dab) Vellowtail Flounder (Sand Dab) Vellowtail Flounder (Sand Dab) Haddock	0.0 215.8 2.2 0.010 by Spee (F/V North Star Contr. 27 Tot. Num. 0 45 1500 140 23 0 0 0 0 1 1 0	0.0 128.0 128.0 0.099 12.6 0.099 12.6 0.099 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f ooth nets hi North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1	0.0 142.4 9.2 0.065 cotrope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 27 3 0 1 0 0 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 9.115.9 1.0 9.5 9.5 9.6 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7	186.9 8.0 0.043 Tenaciou .6" diamorth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 5 1 0 3 3	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0 46 0 0 1	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 0 10 1	1712.9 68.9 0.040 North Star 5um 0 493 14043 688 204 1 312 13 0 0 111 4 0 0 3 5 5	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 35 1 1 0 0 0 0 0	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801 1.236 0.000 0.000 1.716 0.502 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 1 1 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 177 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 11 1 0 0 0 0 0 0 0 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 0 0 0 1 0 0 2 1	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 111 4 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 11 1 2 0 0 0 0	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 5 3 0 0 0 0 0 0 0 0	29.1 0.2 0.007 i Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 2 2 2 0 1	84.0 2.4 0.029 s Tenacious s Tenacious Num./Tow 0 59 758 14 9 0 0 0 0 0 0 0	42.00.00.00.00.00.00.00.00.00.00.00.00.00
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) 17er Sole (Witch Flounder) 15ery Sole (Witch Flounder)	0.0 215.8 2.2 0.0 r Tow by Spee (F/V North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 0 1 1 0 0 0 1 1	0.0 128.0 0.099 secies for 3 th Star). E North Star Contr. 28 Tot Num. 0 44 737 49 38 1 69 2 0 0 0 0 0 0	0.0 267.4 7.6 0.029 7.6 0.029 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 1 5	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope Wive 50 mm North Star Contr. 30 Tot Num. 0 39 965 80 18 0 27 3 0 1 0 0 0 8 0 3	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 115.9 12	186.9 8.0 0.043 Tenaciou .6" diamorth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 5 1 0 0 3 5 0 0 0 0	177.0 8.9 0.050 is) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 6 0 0 0 1 1 0 0 7	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 16 0 26 2 0 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 0 10	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 13 0 111 4 0 0 3 52 6 6 15	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 35 1 0 0 0 0 0 0	46.655 2.934 0.026 0.026 North Star Std. Dev. 0.000 14.228 58.242 32.449 7.159 0.333 14.801 1.236 0.000 1.00	25.0 0,7 0.028 Tenacious Exper. 27 Tot. Num. 61 189 3 0 0 0 1 0 0 0 0 0	69.8 6.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 11 1 0 0 1 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot Num. 0 55 1155 24 21 0 7 0 0 0 0 0 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 1 0 0 0 0 1	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciol Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 5 3 0 0 0 0 0 0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 0 65 9 0 2 2 2 0 1 1 2	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 7 1 0 0 0 0	42.0 0.0 0.0 8.9 3622 11.1 8.4 0.0 0.4 4.2 1.2 0.0 0.4 0.6 0.6 0.6
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio 9 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) stey Spec (Witch Flounder) downan Eliounder (Sand Dab) inter Flounder (Blackback) Yellowdal Flounder Cod Haddock Pollock Gulf Stream Flounder Scallipp Shad Herring	0.0 0.0 215.8 2.2 0.010 215.8 2.2 0.010 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0 128.0 0.099 secies for 3 th Star). E North Star Contr. 28 Tot Num. 0 44 737 49 38 1 69 2 2 0 0 0 0 0 0 0 5 5 1 5 1 5 2 6 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 267.4 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.00 7.0	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope Wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 0 18 0 27 3 0 1 0 0 0 8 0 3 43	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 1215.9 8.5 6 8	186.9 8.0 0.043 Tenaciou 6" diamenth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 0 35 0 0 0	177.0 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.5 vs cont ond mesh North Star Contr. 34 Tot. Num. 0 0 75 1694 76 0 0 0 0 0 0 1 1 0 0 0 0 0 0 7 7 0 0 0 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot Num. 0 72 2667 35 15 0 0 0 0 0 0 7 1 0 0 20	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 0 10 0 4	1712.9 68.9 0.040 North Star 5um 0 493 14043 688 204 1 1312 13 0 0 0 11 4 0 0 0 15 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 35 1 0 0 0 6 1 2 58	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801 1.236 0.000 0.000 1.000 0.000 1.100 0.000 1.100 0.000 0.100 0.00	25.0 0,7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 0 0 1 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot. Num. 0 56 554 31 17 0 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot. Num. 0 49 956 20 10 0 11 1 1 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 1 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot Num. 0 55 1155 24 21 0 0 0 0 1 0 0 0 1 0 4	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 222 0 11 4 0 0 1 0 0 1 1 0 0 0 0 1	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 9 0 0 11 2 0 0 0 0 0	84.8 0.7 0.009 Tenacioti Exper. 3 Tot.Num 0 55 769 8 2 2 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 3 0.5 5 1. 00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	29.1 0.2 0.007 i Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 0 65 9 0 1 2 2 7 4 4 4 720	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 0 7 7 1 1 0 0 0 0	42. 2.0 0.0 s Tenaa s Tenaa 0.0 8.9 3622 11.1 8.4 0.0 0.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake EXP Whiting American Pialce (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Blackback) Vyellowfail Flounder Cod Haddock Gulf Stream Flounder Scallop Shad Herring Alewife	0.0 215.8 2.2 0.0 or Tow by Spee (F/V North Star Contr. 27 Tot.Num. 0 45 1500 140 23 0 0 0 0 1 1 2 23 3 2 2	0.0 128.0 0.099 3 eccles for 3 th Star). E North Star Contr. 28 Tot Num. 0 44 737 49 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 267.4 7.6 0.029 80" raised f oth nets h: North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 6 1 5 5 148 6	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope Wive 50 mm North Star Contr. 30 Tot Num. 0 39 965 80 0 27 3 0 1 0 0 0 0 8 0 3 43 2	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 0.0 1115.9 1215.9 1215.9 1215.9 1215.9 1215.9 1215.9 1215.9 1215.0 1	186.9 8.0 0.043 Tenaciou.6" diamorth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 0 5 1 0 0 5 5 0 0 0 5	177.0 8.9 0.050	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 7 1 0 20 12	146.2 7.2 0.049 h footrops North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 0 10 1 0 4 12	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 1312 13 0 11 4 0 0 3 52 6 8 15 52 6 8	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 1 0 0 1 1 2 58 6	46.655 2.934 0.026 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.033 14.801 1.236 0.000 1.716 0.527 0.000 1.000 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 2.819 0.500 0.50	25.0 0.7 0.028 Tenacious Exper. 27 Tot Num. 61 189 3 0 0 1 0 0 0 0 1 1 8 9 1 1 1 1 1 1 1 1 1 1 1 1 1	69.8 5.4 0.077 Tenacious Exper. 28 Tot. Num. 0 56 554 31 177 0 0 0 0 1 1 79 0 1 79 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 11 1 0 0 1 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 0 0 0 1 0 0 2 1	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 1 0 0 0 0 1	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 11 1 2 0 0 0 0	84.8 0.7 0.009 Tenaciol Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 5 3 0 0 0 0 0 0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 0 2 2 2 2 0 1 1 2 2 2 2 3	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 7 1 0 0 0 0	42.20 0.00 s Tena 0.0 8.9 3622 11.1 8.4 0.0 0.4 2.2 0.0 0.4 0.0 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Palice (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Blackback) Yellowtail Flounder Cod Haddock Pollock Gulf Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted)	0.0 0.0 215.8 2.2 0.010 215.8 2.2 0.010 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0 128.0 0.099 secies for 3 th Star). E North Star Contr. 28 Tot Num. 0 44 737 49 38 1 69 2 2 0 0 0 0 0 0 0 5 5 1 5 1 5 2 6 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 267.4 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.029 7.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope Wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 0 18 0 27 3 0 1 0 0 0 8 0 3 43	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 1215.9	186.9 8.0 0.043 Tenaciou.6" diametrontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 0 5 0 0 0 0 0	177.0 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.5 vs cont ond mesh North Star Contr. 34 Tot. Num. 0 0 75 1694 76 0 0 0 0 0 0 1 1 0 0 0 0 0 0 7 7 0 0 0 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot Num. 0 72 2667 35 15 0 0 0 0 0 0 7 1 0 0 20	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 0 10 0 4	1712.9 68.9 0.040 North Star 5um 0 493 14043 688 204 1 1312 13 0 0 0 11 4 0 0 0 15 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 35 1 0 0 0 6 1 2 58	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801 1.236 0.000 0.000 1.000 0.000 1.100 0.000 1.100 0.000 0.100 0.00	25.0 0,7 0.028 Tenacious Exper. 27 Tot. Num. 61 189 3 0 0 0 1 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot. Num. 0 56 554 31 17 0 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot. Num. 0 49 956 20 10 0 11 1 0 0 0 0 0 4 40 4 4	49.2 0.8 0.016 Tenaclous Exper. 30 Tot. Num. 0 55 440 6 4 0 0 0 0 0 0 0 1 1 1 2 4 1 1 2 1	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 5155 24 21 0 7 0 0 0 0 1 1 0 0 2 1 0 4	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 222 0 111 4 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0	111.1 3.7 0.033 Tenaclous Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 5 3 0 0 0 0 0 0 0 0 0 0 0 0 0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 11 3	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 0 65 9 0 1 2 2 7 4 4 4 720	84.0 2.4 0.029 s Tenacious Num./Tow 0 559 758 14 9 0 0 0 0 0 0 0 0 0 0 7 2 3	42 0.0 s Tena 0.0. 8.9 362 11 8.4. 0.4. 4.2. 1.2. 0.0. 0.4. 1.2. 0.0. 1.3. 1.3. 1.4.
Jonah Crab Rock Crab All Species Total Reg. Species Total Bycatch Ratio ie 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake EXP Whiting White Hake (Cab) Gray Sole (Witch Flounder) dowpane Flounder (Blackback) Yellowtail Flounder (Blackback) Yellowtail Flounder Cod Haddock Guif Stream Flounder Scallop Shad Herring Alewife	0.0 0.0 215.8 2.2 0.010 215.8 2.2 0.010 215.8 2.2 0.010 215.8 2.2 0.010 215.0	0.0 128.0 128.0 0.090 12.6 0.090 12.6 0.090 12.6 0.090 12.6 0.090 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f oth nets h: North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 6 1 5 5 148 6	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope William 142.4 9.2 0.065 00trope William 142.4 143.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 1915.9 8.5 8.6 0.039 0.039 0.039 0.039 0.039 0.039 0.039 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05	186.9 8.0 0.043 Tenaciou.6" diamorth Star I ontr. 33 ot. Num. 0 55 1473 63 21 0 36 1 0 0 5 1 0 0 5 5 0 0 0 5	177.0 8.9 0.050 8.9 0.050 sis) vs cont ond mesh North Star Contr. 34 Tot.Num. 0 75 1694 76 27 0 46 0 0 1 0 0 7 7 0 13 9 0	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot Num. 0 72 2867 35 15 0 0 26 2 0 0 0 7 1 1 0 20 12 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 10 1 0 4 12 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 1 3 1 0 0 1 1 4 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 11 0 0 6 1 2 58 6 0 12 13	46, 655 2 934 0.026 North Star Std. Dev. 0 000 14, 228 582, 842 39, 449 7, 159 0 333 14, 801 1 236 0 000 1 716 0 527 0 000 1 000 2 819 0 500 2 819 0 500 6 8340 4 337 0 000 6 423 5 509	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 1189 3 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 1 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 77 0 0 0 0 1 1 0 1 79 0 1 2	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 0 11 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 0 0 0 0 0 0 0 1 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 0 7 0 0 0 0 1 1 0 0 0 4 0 0 4	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 1 1 0 0 0 3 9	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 11 2 0 0 0 0 0 0 1 1 5 0 0 0 1 1 5 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 8 2 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper 35 1. Tot Num. 0 52 763 3 0.0 5 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	28.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 0 65 9 9 0 1 2 2 7 7 4 4 720 29 0 8 25	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 9 758 14 9 0 0 7 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0	42.9 2.0 0.0 s Tena. 0.0 8.9 3622 11.3 8.4 0.0 0.4 1.2 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3
Jonah Crab Rock Crab Ail Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake American Plaice (Dab) Gray Sole (Witch Flounder) downane Flounder (Blackback) Yellowtall Flounder Cod Haddock Pollock Gulf Stream Flounder Shad Herring Alexand Herring Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish	0.0 215.8 2.2 0.10 r Tow by Spee (F/V North Star Contr. 27 Tot.Num. 0 45 1500 1440 23 0 0 0 1 1 2 23 0 0 0 1 1 2 2 33 2 2 0 8 8	0.0 128.0 128.0 128.0 12.6 0 12.6 0 12.6 0 12.6 0 12.6 0 12.6 0 12.6 0 14.7 14.9 14.7 14.9 14.7 14.9 14.6 1 1.6 15.0 16.0 16.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	0.0 267.4 7.6 0.029 80" raised f oth nets h: North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 1 5 5 148 6 0 0 21	0.0 142.4 9.2 0.065 cootrope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18 0 27 3 0 1 1 0 0 0 8 0 3 43 2 0 5	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 0 8.5 0.039 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenaciou 6.6" diamorth Star i ontr. 33 ot. Num. 0 55 1473 21 0 36 1 0 5 1 0 0 5 1 1 0 0 1 1 1 0 1 1 1 1 1	177.0 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.9 8.9 8.9 8.9 8.9 8.9 8.9 8.	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 0 7 1 1 0 20 7 7	146.2 7.2 0.049 h footrops North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 1 0 4 12 0 23	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13 0 0 11 4 0 0 3 5 5 6 6 15 5 20 6 10 10 10 10 10 10 10 10 10 10 10 10 10	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 35 1 0 0 0 6 1 2 58 6 0 12 13 0	46.655 2.034 0.026 0.026 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 7.159 0.333 14.801 1.236 0.000 1.716 0.527 0.000 0.000 1.000 2.819 0.500 2.179 89.340 4.387 0.000 6.423	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 177 0 0 0 0 1 1 79 0 0 0 1	155.8 2.7 0.017 Tenacious Exper. 29 Tot. Num. 0 49 956 20 10 0 11 1 0 0 0 0 0 460 4 0 4 0 4	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 0 0 1 1 2 1 0 0 0 0 3	111.1 3.7 0.033 Tenaclous Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 8 2 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 3 3 0.5 5 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	29.1 0.2 0.007 IT renacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 2 2 2 0 1 1 2 2 0 0 1 2 2 0 0 8 8 25 4	84.0 2.4 0.029 5 Tenacious Num./Tow 0 59 758 14 9 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0	42.9 2.0 0.0 s Tena. 0.0 8.9 3622 11.3 8.4 0.0 0.4 1.2 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3
Jonah Crab Rock Crab All Species Total Reg. Species Total Reg. Species Total Bycatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Siliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Palice (Dab) Gray Sole (Witch Flounder) dowpan Filounder (Blackback) Yellowfall Flounder Cod Haddock Pollock Gulf Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Oog/Dogfish EXP Dogfish	0.0 215.8 2.2 0.010 215.8 2.2 0.010 215.8 2.2 0.010 215.0 21	0.0 128.0 128.0 12.6 0.0991 0.091 0.	0.0 267.4 7.6 0.029 267.4 7.6 0.029 267.4 7.6 0.029 267.4 7.6 0.029 27.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope William 142.4 9.2 0.065 00trope William 142.4 9.2 00trope William 143.4 00trope William 153.4 00trope William 163.4 00trope William	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 9.0 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5	186.9 8.0 0.043 Tenaciou 8.0 0.043 Tenaciou 6.7 diam 0.5	177.0 8.9 0.050 18) ve continue of mesh North Star Tot.Num. 75 1694 76 0 0 0 1 1 0 0 1 1 1 0 1 1 1 1 1 1 1 1	233.3 4.6 0.020 rol net wis. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 7 1 1 0 0 20 12 0 7 17 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 11 0 4 12 0 23 14 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 1 3 12 13 0 0 11 4 0 0 0 15 15 15 16 16 16 16 16 16 16 16 16 16	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 11 0 0 6 1 258 6 0 112 258 6 0 12 13 0 0	46, 655 2 934 0.026 North Star Std. Dev. 0 000 14, 228 582, 842 39, 449 7, 159 0 333 14, 801 1 236 0 000 1, 716 0 000 1, 716 0 000 1, 716 0 000 1, 200 1, 20	25.0 0.7 0.028 Tenacious Exper. 27 Tot Num. 0 1 189 3 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 9 0 0 1 1 1 0 0 1 1 2 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 0 11 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 0 0 0 0 1 0 0 4 0 0 0 0 4	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 1 1 0 0 0 3 9	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0 0 1 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot Num 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper 35 1. Tot Num. 0 52 763 53 0.0 5 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	28.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 0 65 9 0 0 2 2 2 7 7 4 4 4 4 7 20 0 8 8 25 4	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 0 7 1 1 0 0 0 7 2 3 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0	42.2.0 0.0 s Tena s Ten
Jonah Crab Rock Crab Ail Species Total Reg. Species Reg. Species Reg. Species Reg. Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Blackback) Yellowtall Flounder Cod Haddock Politock Guif Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish	0.0 215.8 2.2 0.010 r Tow by Spine (F/V North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 1 1 3 3 2 0 8 11 0 3	0.0 128.0 128.0 0.090 12.6 0.090 12.6 0.090 12.6 0.090 12.6 0.090 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f oth nets h: North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 6 1 5 148 8 0 0 21 14 0 0	0.0 142.4 9.2 0.065 cotrope wive 50 mm North Star Contr. 30 Tot.Num. 0 39 965 80 18 0 0 27 3 0 1 0 0 0 8 0 3 3 43 2 0 5 9 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 8.5 0.039 8.5 0.039 8.5 0.039 1 1 1 1 1 1 1 1 1	186.9 8.0 10.0.043 Tenaclou 8.0 10.0.043 Tenaclou 10.0 1	177.0 8.9 0.050 8.9 0.050 8.9 0.050 8.9 0.050 8.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	233.3 4.6 0.020 rol net wit cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 16 0 0 266 2 0 0 0 7 1 1 0 7 17 0	146.2 7.2 0.049 h footrops North Star Contr. 36 Tot.Num. 0 62 1192 144 15 0 28 3 0 0 0 10 1 1 0 4 12 0 0 23 140 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 312 13 0 11 4 0 0 3 52 6 15 523 51 0 0 0 108 114 0 0 0 0 0 0 0 0 0 0 0 0 0	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 355 1 0 0 0 6 1 2 58 6 0 0 12 13 0 0 3	46: 655 2 934 0.026 0.026 0.026 0.026 0.000 14: 228 582: 849 0.159 0.333 14: 801 1:236 0.000 1.716 0.527 0.000 2.819 0.500 2.179 88: 340 0.000 2.179 88: 340 0.000 3.122	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 1189 3 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 1 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 77 0 0 0 0 1 1 0 1 79 0 1 2	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 0 11 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 0 7 0 0 0 0 1 1 0 0 0 4 0 0 4	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 1 1 0 0 0 3 9	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 11 2 0 0 0 0 0 0 1 1 5 0 0 0 1 1 5 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciot Exper. 3 Tot.Num 0 55 769 8 8 2 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 us Tenacious 4 Exper 35 1. Tot Num. 0 52 763 3 0.0 5 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	28.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 2 2 2 0 1 1 2 2 0 0 1 2 2 0 0 8 8 25 4	84.0 2.4 0.029 5 Tenacious Num./Tow 0 59 758 14 9 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0	42.2.0 0.0 s Tena s Tena v Std 0.0 8.9 8.3622 11 8.4 0.0 0.4 12.0 0.0 1 12.
Jonah Crab Rock Crab All Species Total Reg. Species Total Reg. Species Total Byeatch Ratio e 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Siliver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pialce (Dab) 3ray Sole (Witch Flounder) downan Filounder (Blackback) Yellowfail Flounder Cod Haddock Pollock Guif Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Gosefish EXP Dogfish Butterfish Loligo Squid	0.0 215.8 2.2 0.010 215.8 2.2 0.010 215.8 2.2 0.010 215.0 21	0.0 128.0 128.0 12.6 0.0991 0.091 0.	0.0 267.4 7.6 0.029 267.4 7.6 0.029 267.4 7.6 0.029 267.4 7.6 0.029 27.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	0.0 142.4 9.2 0.065 142.4 9.2 0.065 00trope William 142.4 9.2 0.065 00trope William 142.4 9.2 00trope William 143.4 00trope William 153.4 00trope William 163.4 00trope William	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 9.0 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5	186.9 8.0 0.043 Tenaciou 8.0 0.043 Tenaciou 6.7 diam 0.5	177.0 8.9 0.050 18) ve continue of mesh North Star Tot.Num. 75 1694 76 0 0 0 1 1 0 0 1 1 1 0 1 1 1 1 1 1 1 1	233.3 4.6 0.020 rol net wis. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 7 1 1 0 0 20 12 0 7 17 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 11 0 4 12 0 23 14 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 1 3 12 13 0 0 11 4 0 0 0 15 15 15 16 16 16 16 16 16 16 16 16 16	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 11 0 0 6 1 258 6 0 112 258 6 0 12 13 0 0	46, 655 2 934 0.026 North Star Std. Dev. 0 000 14, 228 582, 842 39, 449 7, 159 0 333 14, 801 1 236 0 000 1, 716 0 000 1, 716 0 000 1, 716 0 000 1, 200 1, 20	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 1 1 7 9 0 0 1 2 0 3	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 11 1 0 0 0 480 4 3 0 7	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 1 0 0 0 1 1 1 0 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 0 0 0 1 0 0 0 1 0 0 5 5 5 5 5 5 6 6 7 7 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 0 1 1 2 1 0 0 0 5 0 1 5 0 0 0 1 5 0 0 0 1 5 0 0 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 11 2 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 1 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769 8 1 0 0 0 0 0 0 1 1 1 0 0 26 12 0 0 0 3 2 2 4 4	77.5 0.8 0.011 us Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 3 0.0 5 1. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 2 2 2 0 1 1 2 720 29 0 8 8 25 4 0 48	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 0 7 1 1 0 0 0 7 2 3 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0	42.200 0.000 s Tena s Tena 6.000 0.0
Jonah Crab Rock Crab Ail Species Total Reg. Species Reg. Species Reg. Species Reg. Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Blackback) Yellowtall Flounder Cod Haddock Politock Guif Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish	0.0 215.8 2.2 0.010 r Tow by Spine (F/V North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 1 1 3 3 2 0 8 11 0 3	0.0 128.0 128.0 12.6 0.0991 0.091 0.	0.0 267.4 7.6 0.029 80" raised f oth nets h: North Star Contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 0 1 1 1 0 0 0 6 6 1 5 148 8 0 0 21 14 0 0	0.0 142.4 9.2 0.065 142.4 9.2 0.065 0.067 0.067 0.067 0.067 0.07 0.07 0.07	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 9.0 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5	186.9 0.0.043 Tenaclou 6.6 diam 6.7 di	177.0 8.9 0.050 8.9 0.050 18) vs conic sist	233.3 4.6 0.020 rol net wits. Cod ends. North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 0 7 7 1 0 0 11 0 0 17 0 11 0 11	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 1 0 4 12 0 23 14 0 0	1712.9 68.9 0.040 North Star Sum 0 493 14043 688 204 1 13 0 111 4 0 0 0 15 523 51 0 108 114 0 0 0 30	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 11 0 0 6 1 1 2 58 6 0 112 23 0 113 0 0 3 0 10	46: 655 2 934 0.026 North Star Std.Dev. 0.000 14.228 582: 842 39.449 7.159 0.333 14.801 1.236 0.000 1.716 0.000 1.716 0.527 0.000 1.000 2.819 0.500 2.179 89.340 4.387 0.000 6.423 0.500 3.122 0.000 3.122 0.000 3.122 0.000 3.122 0.000 4.717 0.000 4.717	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 0 0 1 189 3 0 0 0 1 0 0 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 1 1 1 0 0 1 2 0 3	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 0 10 0 11 1 0 0 0 0 480 4 4 3 0 7 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 0 7 0 0 0 1 0 0 1 0 0 0 1 0 0 0 5 1 0 0 0 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 11 4 0 0 0 1 1 2 1 0 0 0 5 0 1 5 0 0 0 1 5 0 0 0 1 5 0 0 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0 0 0 0 0 1 5 0 0 0 0 0 0 1 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot Num 0 55 769 8 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 III Tenacious 4 Exper 35 1. Tot Num. 0 52 763 5 3 0 0 5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	28.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 0.65 9 0.0 1 1 2 2 7 7 4 4 4 720 29 0.0 1 8 255 4 0.0 48 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 96 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	84.0 2.4 0.029 s Tenacious Num./Tow 0 59 758 14 9 0 0 7 1 1 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0	42.5 20.0 0.0 0.0 s Tenado s T
Jonah Crab Rock Crab Ail Species Total Reg. Species Total Reg. Species Total Bycatch Ratio Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pialice (Dab) Gray Sole (Witch Flounder) downane Flounder (Blackback) Yellowtall Flounder Cod Haddock Pollock Gulf Stream Flounder Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterlish Loligo Squid Illex Octopus Lobster	0.0 215.8 2.2 0.010 r Tow by Spine (FV North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 0 0 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0	0.0 128.0 128.0 12.6 0.0 12.6 0.0 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 2 0 1 1 1 0 0 0 6 1 1 5 148 6 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0	0.0 142.4 9.2 0.065 cotrope wive 50 mm North Starr Contr. 30 Tot.Num. 0 39 965 80 18 0 0 27 3 0 1 0 0 0 0 8 0 1 1 0 0 0 0 1 1 0 0 0 0	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 8.5 0.039 6.039 7.0 8.5 8.5 8.	186.9 8.0 0.043 Tenascious 8.0 dam 18.0	177.0 8.9 0.050	233.3 4.6 0.020 rol net wit code ends, North Star Contr. 35 Tot.Num. 0 72 2667 35 16 0 0 0 0 7 1 1 0 0 7 1 1 0 0 0 0 7 1 1 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 1 0 4 12 0 23 144 0	17129 68.9 0.040 North Star Sum 0 493 14043 688 204 1312 130 0 111 4 0 0 3 52 6 15 523 51 0 108 114 0 0 0 0 0 0 0 0 0 0	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 23 0 35 1 0 0 0 6 1 2 58 6 0 0 12 13 0 0 0 6 10 0 6 10 0 0 6 10 0 0 6 10 0 0 6 10 0 0 6 10 0 0 0	46: 655 2 934 0 .026 0 .026 0 .026 North Star Std. Dev. 0 .000 14: 228 582: 842 39: 449 7 .159 0 .333 14: 801 1 .236 0 .000 0 .000 1 .000 0 .000 1 .000 2 8:19 0 .500 0 .000 3 .122 0 .000 3 .122 0 .000 3 .122 0 .000 3 .122 0 .000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 1 1 1 0 0 1 1 2 0 3 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 0 11 1 0 0 0 0 0 460 4 3 0 7 0 12 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 0 55 1155 24 21 0 7 7 0 0 0 1 1 0 0 0 2 1 1 0 0 0 4 4 0 0 0 5 0 5 5	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 22 0 111 4 0 0 0 1 1 2 1 0 0 0 0 1 2 1 0 0 0 0 1 2 1 0 0 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 1 1 1 2 0 0 0 0 0 0 0 0 0 1 1 5 0 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 1 0	77.5 0.8 0.011 is Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 3 0.5 1. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 1 2 2 2 0 1 1 2 7 4 4 4 720 29 0 8 25 4 4 0 0 8 96 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	84.0 2.4 0.029 s Tenacious Num/Tow 0 59 758 14 9 0 7 7 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0	42.5 20 0.00 0.00 0.00 0.00 0.00 0.00 0.0
Jonah Crab Rock Crab All Species Total Reg. Species Total Reg. Species Total Reg. Species Total Bycatch Ratio species Total Bycatch Ratio species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Plaice (Dab) Gray Sole (Witch Flounder) dowpane Flounder (Sand Dab) Winter Flounder (Blackback) Yellowall Flounder Cod Haddock Pollock Guif Stream Flounder Scallop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Loligo Squid Illex Octopus Lobster Jonah Crab	0.0 215.8 2.2 0.0 215.8 2.2 0.0 r Tow by Spee (F/V North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 1 1 0 0 0 0 1 1 2 33 2 0 0 1 1 2 33 2 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 128.0 128.0 128.0 12.6 0.0090 0.0090 12.6 12.6 0.0090	0.0 267.4 7.6 0.029 90" raised f oth nets hi North Star Contr. 29 Tot. Num. 0 37 1741 143 21 0 29 2 1 1 1 0 0 6 1 5 148 6 0 21 144 0 1 0 7	0.0 142.4 9.2 0.065 142.9 0.065 0.065 0.065 0.065 0.065 0.07	th no roller fr bar space gr. North Star No Contr. 31 Cc Tot.Num. To	0.0 8.5 8.5 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.7 8.6	186.9 6.0 0.043 fee accious fe	177.0 8.9 0.050 8.9 0.050 18) vs conicipies or	233.3 4.6 0.020 rol net with cool ends, North Star Contr. 35 Tot.Num. 0 72 2667 35 15 0 26 2 0 0 0 0 7 7 1 1 0 20 11 0 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 1 0 4 12 0 23 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17129 68.9 68.9 68.9 68.9 68.9 68.9 68.9 68.	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 35 1 0 0 0 1 1 2 58 6 0 11 2 2 13 0 0 0 0 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0	46.655 2.934 0.026 North Star Std.Dev. 0.000 14.228 582.842 39.449 0.333 14.801 1.236 0.000 1.716 0.527 0.000 1.000 2.819 0.500 2.179 89.340 4.387 0.000 6.423 5.099 0.000 3.122 0.000 3.122 0.000 4.717 0.000 0.000 0.000 0.000 0.000 0.000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 0 1 189 3 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 1 1 1 79 0 0 1 2 0 0 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 49 956 20 0 11 1 1 0 0 0 11 1 0 0 0 480 4 3 0 7 0 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 4 0 1 0 0 0 0 1 1 1 0 0 0 1 1 0 0 0 0 1 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 55 1155 24 21 0 7 0 0 0 1 0 0 0 2 2 1 0 0 0 0 5 5 0 0 0 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 222 0 111 4 0 0 1 2 1 0 0 0 0 1 2 1 0 0 0 0 0 0 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 0 0 0 0 0 1 5 0 0 0 0 1 1 5 0 0 0 0 1 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0	84.8 0.7 0.009 Tenaciolou Exper. 3 Tot Num 55 769 8 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	77.5 0.8 0.011 Is Tenacious 4 Exper 35 1. Tot Num. 0 52 763 5 3 0 0 5 5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	28 1 0 2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 0.65 9 0.0 0.0 1 1 2 2 7 7 4 4 4 720 29 0.0 8 8 8 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	84.0 24.0 0.029 s Tenacious Num./Tow 0 59 758 14 0 0 7 1 1 0 0 0 0 1 1 3 0 0 0 1 1 3 0 0 0 0 0	42.5 20 0.02 0.00 0.00 0.00 0.00 0.00 0.0
Jonah Crab Rock Crab Ail Species Total Reg. Species Total Reg. Species Total Bycatch Ratio Ile 12B. Catch in Numbers per down on 10" roller fram Species Shrimp Whiting/Silver Hake EXP Whiting Red Hake (Ling) White Hake Redfish American Pialce (Dab) Gray Sole (Witch Flounder) dowpans Flounder (Blackback) Yellowdail Flounder Odd Haddock Politock Gulf Stream Flounder Scaliop Shad Herring Alewife Cusk (Spotted) Monkfish/Goosefish Sculpin Spiny Dog/Dogfish EXP Dogfish Butterfish Loligo Squild Illex Octopus Lobster	0.0 215.8 2.2 0.010 r Tow by Spine (FV North Star Contr. 27 Tot.Num. 0 45 1500 0 0 0 0 0 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0	0.0 128.0 128.0 12.6 0.0 12.6 0.0 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	0.0 267.4 7.6 0.029 80" raised f contr. 29 Tot.Num. 0 37 1741 143 21 0 29 2 2 0 1 1 1 0 0 0 6 1 1 5 148 6 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0	0.0 142.4 9.2 0.065 cotrope wive 50 mm North Starr Contr. 30 Tot.Num. 0 39 965 80 18 0 0 27 3 0 1 0 0 0 0 8 0 1 1 0 0 0 0 1 1 0 0 0 0	th no roller fr bar space gri North Star No Contr. 31 CC Tot. Num. To	0.0 0 8.5 0.039 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.9 8.0 0.043 Tenascious 8.0 dam 18.0	177.0 8.9 0.050	233.3 4.6 0.020 rol net wit code ends, North Star Contr. 35 Tot.Num. 0 72 2667 35 16 0 0 0 0 7 1 1 0 0 7 1 1 0 0 0 0 7 1 1 0 0 0 0	146.2 7.2 0.049 h footrope North Star Contr. 36 Tot.Num. 0 62 1192 44 15 0 28 3 0 0 0 10 1 0 4 12 0 23 144 0	17129 68.9 0.040 North Star Sum 0 493 14043 688 204 1312 130 0 111 4 0 0 3 52 6 15 523 51 0 108 114 0 0 0 0 0 0 0 0 0 0	190.3 7.7 0.040 North Star Num./Tow 0 55 1560 76 23 0 35 1 0 0 0 1 2 58 6 0 11 2 13 0 0 6 0 0 6 0	46: 655 2 934 0 .026 0 .026 0 .026 North Star Std. Dev. 0 .000 14: 228 582: 842 39: 449 7 .159 0 .333 14: 801 1 .236 0 .000 0 .000 1 .000 0 .000 1 .000 2 8:19 0 .500 0 .000 3 .122 0 .000 3 .122 0 .000 3 .122 0 .000 3 .122 0 .000	25.0 0.7 0.028 Tenacious Exper. 27 Tot.Num. 0 61 189 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	69.8 5.4 0.077 Tenacious Exper. 28 Tot.Num. 0 56 554 31 17 0 0 0 0 1 1 1 0 0 1 1 2 0 3 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	155.8 2.7 0.017 Tenacious Exper. 29 Tot.Num. 0 49 956 20 10 0 0 11 1 0 0 0 0 0 460 4 3 0 7 0 12 0 0	49.2 0.8 0.016 Tenacious Exper. 30 Tot.Num. 0 55 440 6 0 0 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0	121.3 4.3 0.035 Tenacious Exper. 31 Tot.Num. 55 1155 24 21 0 7 0 0 0 1 0 0 2 2 1 0 0 0 0 5 5 0 5 0	116.3 5.1 0.044 Tenacious Exper. 32 Tot.Num. 0 57 1106 30 222 0 111 4 0 0 1 2 1 0 0 0 0 1 2 1 0 0 0 0 0 1 2 0 0 0 0	111.1 3.7 0.033 Tenacious Exper. 33 Tot.Num. 0 64 1267 12 9 0 0 1 1 1 2 0 0 0 0 0 0 0 0 0 1 1 5 0 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0	84.8 0.7 0.009 Tenaciou Exper. 3 Tot.Num 0 55 769 8 2 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 1 0	77.5 0.8 0.011 is Tenacious 4 Exper. 35 1. Tot Num. 0 52 763 3 0.5 1. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	29.1 0.2 0.007 Tenacious Exper. 36 Tot.Num. 0 81 383 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	839.7 24.3 0.029 Tenacious Sum 0 585 7581 140 88 0 65 9 0 1 2 2 2 0 1 1 2 7 4 4 4 720 29 0 8 25 4 4 0 0 8 96 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	84.0 2.4 0.029 s Tenacious Num/Tow 0 59 758 14 9 0 7 7 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0	42.5 20 0.02 0.00 0.00 0.00 0.00 0.00 0.0

Table 13. Catch in Weight and Number by Paired Tow for Selected Species for 30 Inch Raised Footrope with No Roller Frame Net (F/V Tenacious) and for Control Net with Footrope Down on 10 Inch Frame (F/V North Star).

Both Nets Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

American Plaice Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&NoRoller	Control	30" D&NoRoller
	Weight(kg)	Weight(kg)	Number	Number
1	0.6	0.2	40	2
2	5.6	0.8	138	18
3	2.5	0.6	58	22
4	2	0.05	54	2
5	4	0.8	80	14
6	3.8	1	62	22
7	3.2	2	72	22
8	4.2	0.5	92	16
9	2	0.3	52	10
10	2.6	0.2	56	2

^{*} No Data. Bad tows, or weights only recorded.

Grey Sole Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&NoRoller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	0	0	0	0
2	0.01	0	2	0
3	0.02	0.05	2	1
4	0.02	0	3	0
5	0	0	0	0
6	0	0	0	4
7	0.075	0.01	1	2
8	0.05	0	0	1
9	0.025	0.1	2	1
10	0.1	0	3	0

^{*} No Data. Bad tows, or weights only recorded.

Monkfish Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	1.8	0	8	0
2	1.3	0.1	6	1
3	5.25	1	21	4
4	1.2	0	5	0
5	0.5	0	18	0
6	3.4	0.6	13	3
7	3	0	13	0
8	1.8	0	12	0
9	1.2	0	7	0
10	6.5	0	23	0

^{*} No Data. Bad tows, or weights only recorded.

Red Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	28	0.4	140	3
2	15	5	49	31
3	23.75	3.5	143	20
4	14	1.1	80	6
5	16.75	4.3	84	24
6	10.5	4.8	59	30
7	10.5	2.6	63	12
8	11.5	1.7	76	8
9	5	0.7	35	5
10	9	0.1	44	1

^{*} No Data. Bad tows, or weights only recorded.

White Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller	
	Weight(kg)	Weight(kg)	Number	Number	
1	1.6	0	23	0	
2	7	3.5	38	17	
3	5	1.8	21	10	
4	7	0.7	42	4	
5	7.25	3.2	44	21	
6	4.5	3.8	26	22	
7	4	1.6	21	9	
8	4.5	0.2	27	2	
9	2.5	0.5	15	3	
10	2.5	0	15	0	

^{*} No Data. Bad tows, or weights only recorded.

Silver Hake Catch in Weight and Numbers between 30" Dropper Chains with No Roller Frame and Control with Footrope on Frame Both with 50 mm Grate and 2.6" Diamond Cod End

Tow Pair	Control	30" D&Roller	Control	30" D&Roller
	Weight(kg)	Weight(kg)	Number	Number
1	140	15.5	1500	189
2	67	49.5	737	554
3	200	97.5	5227	956
4	94	40	965	440
5	0*	105	0*	1155
6	175	97	2074	1106
7	150	99	1473	1267
8	140	69.9	1694	769
9	200	66	2667	763
10	100	26	1192	383

^{*} No Data. Bad tows, or weights only recorded.

Table 14.	Tow Inform	ation for	Comparison	n of Squar	e Mesh and	Diamon	d Mesh Cod	Ends in Co	onjunction with Rais	sed Footrope				
							oller Frame							
Vessel	Date	Grate	Cod End		Roller Dia	Tow	Begin	End	Begin	End	Water	Depth	Tow	Wir
V C 3 3 C I	Date	(in)	(in)	(in)	(in)	100	Time	Time	Lat/Long	Lat/Long	Temp	Haul	Speed	Ou
		(111)	(111)	(111)	()		711110	11110	LauLong	Lautong	(°F)	(fm)	(kt)	(fm
North Star	10/5/2001	2	2.2	0	10	41	7:33	8:38	43.59769.69.90841	43.60049,69.85754	0.0	41	2.4	125.
North Star		2	2.2	0	10	42	8:53	10:00		43.59974,69.90740	0.0	45	2.4	125.
Tenacious		2	2.2	30	0	37	7:44	8:43	43.28.45,69.58.05	43.30.19,69.55.70	61.7-61.7	66.7-65.1	2.4	175.
Tenacious	10/3/2001	2	2.2	30	0	38	9:53	10:49	43.35.32,69.52.95	43.37.47,69.52.08	61.3-61.7	48-38	2.4	150.
North Star	10/3/2001	2	2.2	30	10	39	11:38	12:46	43.62656,69.87020	43.60160,69.84519	0.0	27	2.4	125.
North Star	10/3/2001	2	2.2	30	10	40	13:03	14:12	43.59992,69.84575	43.60541,69.90199	0.0	44	2.4	125.
Tenacious		2	2.2	30	10	43	10:47	11:47	43.36.09,69.53.28	43.35.60,69.50.78	63.6-63.8	46-49.5	2.3	125.
Tenacious	10/5/2001	2	2.2	30	10	44	12:10	13:14	43.35.29,69.50.20	43.36.01,69.54.10	63.5-63.6	49-48.5	2.5	125.0
North Star	10/5/2001	2	2.6	0	10	43	10:42	11:47	42 60690 60 00227	43.59377,69.84792	0.0	48	2.4	125.
North Star		2	2.6	0	10	44	12:11	13:17		43.60176,69.90220	0.0	48	2.4	125.0
Tenacious		2	2.6	30	0	39	11:43	12:46	43.37.13,69.51.40		61.5-61.5	39-46.5	2.4	150.0
Tenacious		2	2.6	30	0	40	13:08	14:09	43.35.42,69.50.32	43.36.12,69.54.21	62.2-61.8	49-48.5	2.5	125.0
North Star		2	2.6	30	10	37	7:36	8:46	43.46967,69.97322		0.0	65	2.4	175.0
North Star		2	2.6	30	10	38	9:43	10:49	43.58435,69.88604		0.0	46	2.4	125.0
Tenacious		2	2.6	30	10	41	7:40	8:37	43.54.23,69.54.23	43.36.20,69.51.52	63.8-64	47.5-47	2.3	125.0
Tenacious		2	2.6	30	10	42	8:58	10:00	43.35.51,69.51.02	43.36.09,69.54.26	63.5-63.5	47-48	2.4	125.0

Vessel	Date	Grate	Cod End	Dropper	Roller Dia	Tow	Total Weight	leg. Sp. W	% Reg.Sp.	T	otal Number	No.Reg.Sp	%Reg.Sp.	
		(in)	(in)	(in)	(in)		(kg)	(kg)						
North Star		2	2.2	0	10	41	115.8	15.3	13.2		548	132	24.1	
North Star		2	2.2	0	10	42	106.9	10.7	10.0		1302	85	6.5	
Tenacious		2	2.2	30	0	37	69.7	16.6	23.8		528	80	15.2	
Tenacious	10/3/2001	2	2.2	30	0	38	132.8	6.3	4.7		1618	70	4.3	

Vessel	Date	Grate (in)	Cod End (in)	Dropper (in)	Roller Dia (in)	Tow	Fotal Weigh (kg)	Reg. Sp. William (kg)	% Reg.Sp.		Total Numbel	No.Reg.Sp	%Reg.Sp.
North Star	10/5/2001	2	2.2	0	10	41	115.8	15.3	13.2		548	132	24.1
North Star	10/5/2001	2	2.2	0	10	42	106.9	10.7	10.0		1302	85	6.5
Tenacious	10/3/2001	2	2.2	30	0	37	69.7	16.6	23.8		528	80	15.2
Tenacious	10/3/2001	2	2.2	30	0	38	132.8	6.3	4.7		1618	70	4.3
North Star	10/3/2001	2	2.2	30	10	39	151.7	4.2	2.8		1239	53	4.3
North Star	10/3/2001	2	2.2	30	10	40	146.1	7.4	5.1		1236	69	5.6
Tenacious	10/5/2001	2	2.2	30	10	43	69.4	7.3	10.5		671	64	9.5
Tenacious	10/5/2001	2	2.2	30	10	44	61.0	3.4	5.6		630	31	4.9
						Sum	853.3	71.1	9.5	Mean %	7772	584	9.3
						Mean	106.7	8.9	8.3	% of Means	971	73	7.5
North Star		2	2.6	0	10	43	198.8	17.4	8.8		2566	141	5.5
North Star		2	2.6	0	10	44	96.8	5.6	5.8		1316	52	4.0
Tenacious		2	2.6	30	0	39	107.8	3.2	3.0		1444	42	2.9
	10/3/2001	2	2.6	30	0	40	83.1	1.2	1.4		1118	21	1.9
North Star		2	2.6	30	10	37	100.4	33.8	33.7		514	234	45.6
North Star		2	2.6	30	10	38	186.2	7.9	4.2		1938	71	3.7
Tenacious		2	2.6	30	10	41	147.2	11.2	7.6		1610	104	6.5
Tenacious	10/5/2001	2	2.6	30	10	42	110.8	5.3	4.8		1196	44	3.7
						Sum	1031.1	85.6	8.7	Mean %	11701	710	9.2
						Mean	128.9	10.7	8.3	% of Means	1463	89	6.1

Table 15. F/V North Star Tows with Bottom Friendly net, 50 mm Grate and 2.6" Diamond Mesh Cod End, October, November, 2001.

Date	Tow#	Tot.Catch	Whiting	Reg Sp	RegSp% Tot Cat	Tow Time	Depth (F)	Tow Time DecHrs	Tot.Cat/Hr	Reg.Sp/Hr	%Reg.Sp
10/9/2001	1	186.0	140	5.4	2.9	1:20	55-64	1.33	139.5	4.1	2.9
10/9/2001	2	216.0	190	3.3	1.5	1:35	61-63	1.58	136.4	2.1	1.5
10/9/2001	3	236.9	200	4.2	1.8	1:42	63-60	1.70	139.4	2.4	1.8
10/11/2001	4	0.0	0	0.0	0.0	1:00	58-62	1.00			
10/11/2001	5	19.9	19	0.0	0.0	1:30	65-70	1.50			
10/11/2001	6	162.7	100	6.5	4.0	1:30	68-59	1.50			
10/11/2001	7	106.1	65	9.2	8.7	1:20	60-51	1.33	79.6	6.9	8.7
10/12/2001	8	64.0	35	2.4	3.8	2:00	60-68	2.00	32.0	1.2	3.8
10/12/2001	9	54.6	40	1.1	2.0	1:22	68.00	1.37	40.0	0.8	2.0
10/12/2001	10	48.2	36	0.8	1.7	1:20	71-74	1.33	36.2	0.6	1.7
10/12/2001	11	91.6	64	3.7	4.0	1:30	64-58	1.50	61.1	2.5	4.0
10/16/2001	12	176.0	140	6.0	3.4	1:55	64-61	1.92	91.8	3.1	3.4
10/16/2001	13	216.0	175	5.0	2.3	1:27	62-63	1.45	149.0	3.4	2.3
10/16/2001	14	139.3	115	3.5	2.5	1:04	63-68	1.07	130.5	3.3	2.5
10/16/2001	15	113.4	85	2.7	2.3	1:45	66-58	1.75	64.8	1.5	2.3
10/19/2001	16	262.5	210	4.8	1.8	2:00	51-68	2.00	131.2	2.4	1.8
10/19/2001	17	221.1	183	3.3	1.5	2:00	68-59	2.00	110.6	1.6	1.5
10/19/2001	18	0.0	0	0.0	0.0	1:15	59-62	1.25			
10/20/2001	19	223.8	175	4.3	1.9	1:30	63-64	1.50	149.2	2.8	1.9
10/20/2001	20	158.1	135	3.3	2.1	1:33	64-70	1.55	102.0	2.1	2.1
10/20/2001	21	128.6	100	3.4	2.6	1:47	72-64	1.78	72.1	1.9	2.6
10/22/2001	22	128.2	120	2.5	2.0	1:30	59-63	1.50	85.5	1.7	2.0
10/22/2001	23	95.5	85	2.8	2.9	1:28	63-62	1.47	65.1	1.9	2.9
10/22/2001	24	235.3	200	6.8	2.9	1:27	62-61	1.45	162.2	4.7	2.9
10/22/2001 10/23/2001	25	69.8	60	2.4	3.4	1:35	64-57	1.58	44.1	1.5	3.4
10/23/2001	26 27	67.1 90.6	60 80	1.2	1.7	1:43	63-66	1.73	38.7	0.7	1.7
10/23/2001				2.8	3.1	1:30	63-64	1.50	60.4	1.9	3.1
10/28/2001	28 29	82.0 32.8	72 13	2.1 0.1	2.6	1:53	63-65	1.88	43.5	1.1	2.6
10/28/2001	30	30.7	25	0.1	0.3 2.6	0:23	37-39	0.38	85.6	0.3	0.3
10/28/2001	31	103.4	65	3.3		0:36	48-55	0.60	51.2	1.3	2.6
10/28/2001	32	81.4	72	0.5	3.1 0.7	1:30	65-70	1.50	68.9	2.2	3.1
10/29/2001	33	71.6	62	2.1	2.9	1:25 1:21	58-56 58-63	1.42	57.5	0.4	0.6
10/29/2001	34	96.4	80	0.9	0.9	1:17	58-63 66-67	1.35 1.28	53.0 75.1	1.5	2.9
10/29/2001	35	84.0	70	2.0	2.4	1:25	73-72	1.42	59.3	0.7 1.4	0.9
10/29/2001	36	71.3	58	2.2	3.0	1:25	71-60	1.42	50.3	1.5	2.4 3.0
10/31/2001	37	96.1	85	3.3	3.4	1:15	62-64	1.25	76.9	2.6	3.4
10/31/2001	38	141.3	100	4.0	2.8	1:19	63-60	1.32	107.3	3.0	2.8
10/31/2001	39	116.0	72	2.8	2.4	1:28	63-60	1.47	79.1	1.9	2.4
10/31/2001	40	84.4	60	1.3	1.5	1:15	61-58	1.25	67.5	1.0	1.5
11/4/2001	41	176.6	144	4.2	2.4	2:00	67-64	2.00	88.3	2.1	2.4
11/4/2001	42	78.1	70	1.1	1.3	1:15	65-64	1.25			
11/4/2001	43	108.7	95	4.4	4.0	1:20	69-66	1.33	81.5	3.3	4.0
11/4/2001	44	108.7	100	0.7	0.6	1:15	67-63	1.25	87.0	0.5	0.6
11/8/2001	45	84.2	72	3.0	3.6	1:35	65-60	1.58	53.2	1.9	3.6
11/8/2001	46	102.1	90	3.8	3.7	1:30	64-59	1.50	68.0	2.5	3.7
11/8/2001	47	106.8	100	1.5	1.4	1:30	60-68	1.50	71.2	1.0	1.4
11/8/2001	48	31.4	30	0.0	0.0	1:35	68-66	1.58			
11/10/2001	49	123.9	100	2.5	2.0	1:15	59-68	1.25	99.1	2.0	2.0
11/10/2001	50	110.8	90	2.4	2.2	1:50	69-72	1.83	60.4	1.3	2.2
11/10/2001	51 52	77.6	68	1.3	1.7	1:40	68-60	1.67	46.5	8.0	1.7
11/11/2001	52 53	174.4	145	4.6	2.6	1:40	64-67	1.67	104.6	2.8	2.6
11/11/2001	53 54	127.7 107.4	108 92	2.3 2.3	1.8	1:40	68-60	1.67	76.6	1.4	1.8
11/11/2001	55	167.4	144	6.2	2.1	2:08	64-65	2.13	50.4	1.1	2.1
11/15/2001	56	99.8	84	3.8	3.7	1:20	69-62	1.33	125.4	4.7	3.7
11/15/2001	57	270.8	210	12.0	3.8 4.4	1:23 1:35	61-62 64-65	1.38	72.1 171.0	2.7	3.8
11/15/2001	58	198.7	155	6.8	3.4	1:32	64-60	1.58 1.53	171.0 129.6	7.6	4.4
11/17/2001	59	126.3	105	2.8	2.2	1:35	65-63	1.53	79.8	4.4	3.4
11/17/2001	60	97.6	83	2.2	2.2	1:43	64-67	1.72	79.8 56.8	1.8	2.2 2.3
11/17/2001	61	98.5	85	3.3	3.3	1:33	67-62	1.72	63.5	1.3 2.1	3.3
11/21/2001	62	74.9	60	0.4	0.5	1:30	40-57	1.50	49.9	0.3	0.5
11/21/2001	63	118.2	95	2.7	2.2	1:24	68-70	1.40	84.4	1.9	2.2
11/21/2001	64	140.5	108	3.3	2.3	1:20	68-60	1.33	105.4	2.5	2.2
11/24/2001	65	175.8	150	3.4	1.9	1:29	64-66	1.48	118.5	2.3	1.9
11/24/2001	66	137.9	122	1.9	1.4	1:26	67-62	1.43	96.2	1.3	1.4
11/24/2001	67	113.8	93	2.9	2.6	1:13	63-67	1.22	93.5	2.4	2.5
11/24/2001	68	193.1	175	5.3	2.8	1:34	66-63	1.57	123.2	3.4	2.7
11/27/2001	69	234.5	185	7.4	3.2	1:33	67-64	1.55	151.3	4.8	3.2
11/27/2001	70	156.0	140	4.2	2.7	1:43	63-68	1.72	90.9	2.4	2.7
11/27/2001	71	143.4	118	3.4	2.4	1:46	67-61	1.77	81.2	1.9	2.4

Yellow = Tows with Problems, discounted.

Total	5575.7	142.2	%Reg.Sp.
Mean Kg/Hr	85.8	2.2	2.5
StdDev	34.39	1.40	1.18
Number of Tows	65		

Table 16. Whiting Grate Raised Footrope Sweepless Trawl Trials: 50 mm Bar Spacing, 2-1/2 Inch Cod End Mesh 2002 Tow Data: F/V Tenacious.

2002 Tow Data: F/V Tenacious.												
Date	Tow	Begin	End	Begin	Begin	End	End	Water	Depth	Depth	Tow	Wire
		Time	Time	Lat	Long	Lat	Long	Temp	Haul Start	Haul End	Speed	Out
								(oF)	(fm)	(fm)	(kt)	(fm)
9/9/2002	1	8:07	8:49	4335.541	6956.386	4334.461	6958.121	0	47.5	51.8	2.5	150
9/9/2002	2	9:22	10:31	4333.82	6958.852	4333.914	6958.442	0	53	53.5	2.4	150
9/9/2002	3	11:11	12:35	4330.72	6954.909	4331.219	6954.795	0	62.7	60.8	2.4	175
9/9/2002	4	13:07	14:27	4330.091	6954.681	4331.16	6954.685	0	66.4	61.3	2.4	175
9/10/2002	5	7:28	8:47	4331.03	6954.751	4328.866	6957.501	0	60	65	2.4	175
9/10/2002	6	9:20	10:32	4328.636	6958.054	4330.795	6955.453	0	66	62	2.4	175
9/10/2002	7	10:57	12:28	4330.317	6955.969	4327.914	6958.474	0	62.5	66.5	2.4	175
9/10/2002	8	12:55	14:15	4328.319	6958.669	4330.351	6955.836	0	68.5	65	2.4	175
9/10/2002	9	15:03	16:04	4331.123	6956.559	4334.016	6958.689	0	62	57.6	2.4	175
9/17/2002	10*	7:05	8:10	4335.917	6951.377	4336.179	6952.08	0	49.7	47	2.3	150
9/17/2002	11*	9:18	10:30	4331.189	6954.783	4328.865	6957.436	0	60.9	65.6	2.3	175
9/17/2002	12*	11:08	12:15	4328.48	6956.572	4330.623	6954.181	0	68.5	62	2.3	175
9/17/2002	13*	12:45	13:48	4331.422	6954.105	4328.272	6958.091	0	63	68.5	2.4	175
9/24/2002	16	8:00	9:37	4331.26	6954.637	4328.356	6957.842	0	59.5	68.4	2.3	175
9/24/2002	17	10:00	11:50	4328.386	6958.08	4331.476	6954.412	0	67.3	59.3	2.3	175
9/24/2002	18	12:45	14:01	4329.02	6954.022	4326.115	6956.419	0	72	78.4	2.3	200
9/25/2002	19	8:12	9:16	4320.455	7008.6	4318.387	7010.484	0	63.1	61.4	2.3	175
9/25/2002	20	9:40	0:00	4318.442	6910.482	4320.84	7009.231	0	62.6	63	2.3	175
9/25/2002	21	11:48	12:56	4325.559	7005.83	4328.107	7004.55	0	64	62.7	2.3	175
9/25/2002	22	13:35	14:47	4328.205	6959.148	4330.553	6956.438	0	60	61.6	2.3	175
12/19/02	23	7:34	8:43	4330.374	6954.714	4328.359	6956.606	0	62.8	68.9	2.4	200.0
12/19/02	24	9:06	10:08	4328.220	6956.680	4325.739	6957.830	0	71.3	75.5	2.3	200.0
12/19/02	25**	10:43	11:36	4324.670	6958.400	4326.358	6956.058	0	84.0	80.5	2.3	200.0
12/19/02	26	12:06	12:58	4326.086	6956.277	4327.650	6954.834	0	78.0	77.6	2.3	200.0
1/8/2003	27	7:38	8:40	4331.28	6954.70	4328.70	6955.97	0	62.1	68.8	2.3	200.0
1/8/2003	28	9:08	10:10	4328.73	6956.30	4331.04	6954.80	0	68.3	62.4	2.3	200.0
1/8/2003	29***	10:43	11:35	4331.07	6953.89	4328.64	6958.34	0	62.0	70.1	2.3	200.0
								10.507				

^{*} Tows not included. 2" Cod Ends, 10 - 13, fouled, or twisted net, 25, 29

Note: Tows 14, 15 on 9/19/02 were with the Netmind system, Tow 14 with F/V Tenacious, Tow 15 with F/V North Star.

^{**} twist in net ahead of grate, no catch.

^{***} fouled net, no catch.

Table 16. Continued. Whiting Grate Raised Footrope Sweepless Trawl Trials: 50 mm Bar Spacing, 2-1/2 Inch Cod End Mesh 2002 Tow Data: F/V Tenacious.

Г			Dec Co	Total	Descent	Descent Comments
1	Tow	Whiting	Reg. Sp.	Total	Percent	Percent Comments:
1		kg	kg	Catch	Bycat/Tow	
L				kg	Reg.Sp.	Reg.Sp.
	1	28	2	46	3.88	
	2	3.4	0	14.1	0.00	
	3	50.4	2.45	74.1	3.31	
	4	39	1.3	54	2.41	2.94
	5	7.2	0.15	14.7	1.02	Comments Attempt to raise opening of net.
	6	113.8	1.45	127.5	1.14	(Placed two three-in-one cans on header rope.)
	7	31	0.15	43.9	0.34	
	8	27.4	0.95	36.1	2.63	
	9	1.95	0.05	8.5	0.59	1.19
	10*	10.5	0.1	112	0.09	*Comment 2 Inch cod ends
	11*	22	0.1	34.3	0.29	* 2 Inch cod ends
	12*	56	0.45	64.3	0.70	* 2 Inch cod ends
	13*	59.5	0.2	67.3	0.30	* 2 Inch cod ends
	16	9.4	1.55	17	9.12	
	17	26	2.35	43.4	5.42	Comments Variable speeds due to high current wind and swells 2-4ft.
	18	5.8	1.1	11.7	9.40	6.93 Comments Variable speeds due to high current wind and swells 2-4ft.
	19	62	2.6	90.4	2.88	(Increases in depths over 60 fm show large increase in)
	20	84	5.1	110.4	4.62	(by-catch for this region. 'Lot a tide.')
	21	13.6	0.7	55.7	1.26	Comments Lots of squalus
	22	23.8	0.7	50.5	1.39	2.96 Comments Whiting runs in the summer
	23	5.0	2.1	56.4	3.64	
	24	10.8	7.9	119.0	6.60	
	25**	0.2	0.0	0.2	0**	*Comment Twist in net before grate at start of tow;
	26	3.8	1.4	14.6	9.62	5.95 untwisted during haulback; flushed everything out grate hole
	27	6.0	2.1	37.0	5.57	, , , , , , , , , , , , , , , , , , , ,
	28	7.0	1.6	32.8	4.72	
	29***	0.0	0.0	0.0	0***	5.17 *Comment Fouled net; nothing.
						22
	Sum	559.30	37.31	1058.20	79.55	5 25.15
	Mean			3.53		
				0.00	0.10	

Table 17. Whiting Grate Raised Footrope Sweepless Trawl Tows: Coastal Maine, September, 2002 - January, 2003. F/V Tenacious. Mean Catch per Tow by Species and Percent Bycatch of Regulated Species.

Date	9/9/2002	9/9/2002	9/9/2002	9/9/2002	9/10/2002	9/10/2002	9/10/2002	9/10/2002	9/10/2002	9/24/2002
Tow Number	1	2	3	4	5	6	7	8	9	16
Species	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)				
Shrimp	0	0	0	0	0	0	0	0	0	0
Whiting/Silver Hake	28	3.4	50.4	39	7.2	113.8	31	27.4	1.95	9.4
EXP Whiting	28	3.4	50.4	39	7.2	113.8	31	27.4	1.95	9.4
Red Hake (Ling)	9	1.4	2	2.2	0	4.6	1.15	2.4	0.7	1.65
White Hake	0.5	0	1.2	0.3	0	0.25	0.15	0.4	0.05	0.7
Redfish	0.1	0	0	0	0	0	0	0	0	0
American Plaice (Dab)	1	0	1	0.5	0.1	1.05	0	0.55	0	0.6
Gray Sole (Witch Flounder)	0.15	0	0.1	0.35	0.05	0.15	0	0	0	0.25
Windowpane Flounder (Sand Dab)	0	0	0	0	0	0	0	0	0	0
Winter Flounder (Blackback)	0.05	0	0	0	0	0	0	0	0	0
Yellowtail Flounder	0	0	0	0	0	0	0	0	0	0
Cod	0	0	0	0	0	0	0	0	0	0
Haddock	0	0	0	0.15	0	0	0	0	0	0
Pollock	0	0	0.15	0	0	0	0	0	0	0
Herring	0	6.8	16.6	10	4.6	3.6	8	2.6	4.25	0
Alewife	4.6	1.4	2.4	0	2.4	3	2.9	2.2	1.15	0.95
Illex	0.2	0.6	0.2	0.4	0.25	0.505	0.6	0.4	0	0.3
Butterfish	0.9	0.4	0	0	0	0.2	0	0.05	0.05	0.3
Sculpin	0.3	0	0	0	0	0	0	0	0	0
Skate	0	0	0	0	0	0	0	0	0	0
Spiny Dog/Dogfish	0	0	0	0.3	0	0	0	0	0	2.6
Monkfish/Goosefish	0.3	0	0	0.5	0	0	0	0	0	0
Scallop	0	0	0	0.1	0	0	0	0	0	0.25
Mackeral	0	0	0	0	0	0	0	0	0	0
Shad	0.1	0	0	0	0.1	0.35	0.1	0.1	0.15	0
Four Spot Flounder	0.15	0	0	0	0	0	0	0	0	0
Wrymouth	0	0	0	0	0	0	0	0	0	0
Spider Crab	0	0	0	0	0	0	0	0	0	0
Lobster	0.9	0	0	0	0	0	0	0	0.15	0
Jonah Crab	0.15	0.1	0	0.15	0	0	0	0	0	0
Rock Crab	0	0	0	0	0	0	0	0	0	0
Total Catch	46.4	14.1	74.1	54.0	14.7	127.5	43.9	36.1	8.5	17.0
Bycatch Regulated Species	1.8		2.45	1.3	0.15	1.45	0.15	0.95	0.05	1.55
Bycatch Ratio	0.0388	0.0000	0.0331	0.0241	0.0102	0.0114	0.0034	0.0263	0.0059	0.0912

Table 17, Continued. Whiting Grate Raised Footrope Sweepless Trawl Tows: Coastal Maine, September, 2002 - January, 2003. F/V Tenacious. Mean Catch per Tow by Species and Percent Bycatch of Regulated Species.

	9/24/2002					12/19/2002	12/19/2002	12/19/2002	1/8/2003	1/8/2003
17	18	19	20	21	22	23	24	26	27	28
Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)
0	0.2	0	0	0	0	4.25	3.05	0.4	19	10
26	5.8	62	84	13.6	23.8	5	10.8	3.75	6	7
26	5.8	62	84	13.6	23.8	5	10.8	3.75	6	7
6.4	4.2	2	5.6	4.35	0.9	0.35	2.8	1	1.2	1.5
0.45	0	1.3	3	0.4	0	1.1	5.2	0.95	0.6	0.5
0	0.05	0	0.05	0	0	0.15	0.05	0	0.11	0
1.65	0.15	0.35	1.9	0.25	0.45	0.75	1.9	0.2	0.85	0.95
0.25	0.35	0.2	0.05	0.05	0.25	0.05	0.4	0.25	0.4	0.1
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0.1	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0.05	0	0	0
0	0.55	0.75	0	0	0	0	0	0	0	0
0	0	0	0.1	0	0	0	0.25	0	0	0
0	0	0.45	0.05	1.35	1.15	0	0	0	0.1	0.2
3.7	0.05	8.8	6.6	7.4	2.75	0	0	0	0	0
1.85	0.05	1.05	2.55	1.75	0.5	0.05	0.5	0	0.1	0
0.9	0.05	0.05	0.05	0.35	0.45	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0.3
0	0	0	0	0	0	0	0	0	0	0
2	0	11.6	3.4	25.4	20.2	42.2	93.4	7.5	8	12
0	0	0	0	0	0	0	0	0	0	0
0.15	0.2	0	0.05	0	0	0.35	0.6	0.05	0.3	0.25
0	0	0	0	0	0	0.15	0	0	0	0.01
0	0	1.85	2.95	0.8	0	0	0	0.05	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0.05	0	0	0	0
0	0	0	0	0	0	0.2	0	0	0	0
0	0	0	0	0	0	0.75	0	0.4	0	0
0	0.05	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0.95	0	0	0.2	0
43.4	11.7	90.4	110.4	55.7	50.5	56.4	119.0	14.6	37.0	32.8
2.35	1.1	2.6	5.1	0.7	0.7	2.05	7.85	1.4	2.06	1.55
0.0542	0.0940	0.0288	0.0462	0.0126	0.0139	0.0364	0.0660	0.0962	0.0557	0.0472

Table 18. Whiting Grate Raised Footrope Sweepless Trawl Tows, September, 02 - January, 03. Coastal Maine. F/V Tenacious. Mean Catch/Tow by Species & % Bycatch Reg. Species

	Tot Cat/Tow	Mean Cat/Tow
	21 Tows	kg
Shrimp	36.9	1.76
Whiting/Silver Hake	559.3	26.63
EXP Whiting	559.3	26.63
Red Hake (Ling)	55.4	2.64
White Hake	17.05	0.81
Redfish	0.51	0.02
American Plaice (Dab)	14.2	0.68
Gray Sole (Witch Flounder)	3.4	0.16
Windowpane Flounder (Sand Dab)	0	0.00
Winter Flounder (Blackback)	0.15	0.01
Yellowtail Flounder	0	0.00
Cod	0.05	0.00
Haddock	1.45	0.07
Pollock	0.5	0.02
Herring	59.75	2.85
Alewife	50.3	2.40
Illex	11.855	0.56
Butterfish	3.75	0.18
Sculpin	0.6	0.03
Skate	0	0.00
Spiny Dog/Dogfish	228.6	10.89
Monkfish/Goosefish	8.0	0.04
Scallop	2.3	0.11
mackeral	0.16	0.01
shad	6.55	0.31
Four Spot Flounder	0.15	0.01
Wrymouth	0.05	0.00
Spider Crab	0.2	0.01
Lobster	2.2	0.10
Jonah Crab	0.45	0.02
Rock Crab	1.15	0.05
Total Catch kg	1057.775	50.37
Reg. Sp. Bycatch Total kg	37.31	1.78
Percent Bycatch	3.53	3.53

Table 19. Whiting Grate Raised Footrope Sweepless Trawl Trials: 50mm bar spacing, 2-1/2 inch Cod End Mesh 2002 Tow Data: Whiting Trials: F/V North Star.

Date	Tow	Begin	End	Begin	Begin	End	End	Water	Depth	Depth	Tow	Wire
		Time	Time	Lat	Long	Lat	Long	Temp	Haul Start		Speed	Out
							Long	(oF)	(fm)	(fm)	(kt)	(fm)
10/15/2002	1	9:49	10:50	4325.709	7005.87	4323.568	7004.269	0	68	61.7	2.4	200
10/15/2002	2	11:18	12:20	4323.24	7004.6	4321.196	7005.919	0	71	73.8	2.3	200
10/15/2002	3	12:47	13:49	4320.86	7005.71	4318.738	7006.702	0	78	74.5	2.3	225
10/15/2002	4	14:16	15:20	4318.91	7007.12	4320.79	7008.635	0	73	63.5	2.3	200
10/21/2002	5	8:15	9:40	4321.395	7009.031	4318.858	7008.651		65	67	2.5	175
10/21/2002	6	12:40	13:42	4321.435	7009.061	4319.34	7009.946		62	64	2.6	175
10/22/2002	7	8:25	9:30	4323.124	7006.315	4320.615	7006.189	0	68.1	69.9	2.4	200
10/22/2002	8	9:52	10:54	4320.16	7006.02	4317.793	7006.526	0	75	78.8	2.4	225
10/22/2002	9	11:32	12:33	4319.286	7007.847	4321.276	7008.831	0	74.4	59.9	2.4	200*
10/22/2002	10	12:54	13:50	4321.456	7008.018	4323.584	7009.722	0	63.7	54.1	2.4	175
10/23/2002	11	8:57	9:58	4329.293	7003.34	4327.611	7004.903	0	58.4	64.4	2.4	175
10/23/2002	12	10:06	11:08	4327.24	7004.8	4325.193	7005.653	0	67	64.8	2.4	175
10/23/2002	13	11:24	12:24	4324.74	7005.52	4322.62	7006.41	0	67	64	2.4	200
10/23/2002	14	12:43	13:42	4322.85	7006.42	4324.732	7007.764	0	68	58	2.4	175
10/24/2002	15	8:20	9:21	4324.322	7007.143	4321.85	7006.465	0	62.2	68	2.6	175
10/24/2002	16	9:46	10:46	4321.32	7006.22	4319.088	7006.558	0	71	72.2	2.5	200
10/24/2002	17	11:10	12:10	4319.17	7007.26	4320.739	7008.64	0	70	64.1	2.4	175
10/24/2002	18	12:25	13:27	4320.57	7008.82	4318.325	7009.691	0	63	67	2.5	175
10/24/2002	19	13:55	14:10	43189.75	7009.78	0	0	0	61	0	2.4	175
10/25/2002	20	7:47	9:05	4328.776	6958.297	4330.594	6955.092	0	63.9	61.7	2.4	175
10/25/2002	21	9:24	10:27	4330.47	6954.8	4330.98	6955.498	0	63	62.3	2.4	175
10/25/2002	22	10:48	11:52	4330.68	6955.46	4329.003	6957.681	0	62	65.4	2.5	175
10/25/2002	23	12:31	13:35	4330.35	7000.37	4328.416	7002.507	0	61	64.3	2.5	175
10/28/2002	24	8:45	9:49	4330.134	7002.417	4328.136	7004.464	0	57.9	61.7	2.4	175
10/28/2002	25	10:22	12:00	4326.5	7005.25	4324.237	7004.712	0	70	67.5	2.5	200
10/28/2002	26	11:55	12:55	4323.83	7003.29	4324.885	7000.627	0	73	74	2.3	225
10/31/2002	27	7:43	8:50	4328.522	6958.527	4329.68	6955.311	0	67.7	67	2.4	175
10/31/2002	28	9:15	10:13	4329.8	6955.2	4331.526	6954.435		67	59.4	2.4	175
10/31/2002	29	10:35	11:33	4331.13	6954.32	4329.06	6955.99	0	60	65.5	2.4	175
10/31/2002	30	11:58	12:56	4328.7	6956.25	4328.371	6958.965	0	67	63.2	2.5	200
10/31/2002	31	13:18	14:17	4328.54	6958.27	4329.889	6955.678	0	67	65.7	2.4	175
11/1/2002	32	8:34	9:36	4324.258	7007.139	4321.897	7006.456	0	62.8	70.6	2.4	175
11/1/2002	33	9:58	11:00	4322.06	7005.89	4323.955	7004.482	0	76	69	2.4	225
11/1/2002	34	11:22	12:25	4324.24	7004.64	4326.423	7005.578	0	67	65	2.4	200
11/3/2002	35	8:06	9:06	4324.4	7007.193	4321.94	7006.483	0	62.6	71.4	2.4	175
11/3/2002	36	9:33	10:32	4322.11	7006.44	4324.291	7006.99	0	71	63.5	2.4	200
11/3/2002	37	10:57	11:57	4323.66	7006.85	4321.247	7006.475	0	63	68.3	2.4	200
11/3/2002	38	12:29	13:26	4320.32	7006.55	4322.702	7006.651	0	68	66.4	2.4	200
11/3/2002	39	13:52	14:55	4323.03	7006.42	4324.951	7008.275	0	67	55.5	2.4	175
11/20/2002	40	8:03	9:19	4325.52	7005.6	4322.86	7004.75	0	67	70	2.4	0
11/20/2002	41	9:35	10:38	4322.51	7005.02	4320.066	7004.545	0	85	0	2.5	225
11/20/2002	42	10:59	12:02	4319.746	7004.312	4318.041	7002.798	0	89	0	2.5	250
11/20/2002	43	13:05	14:09	4320.356	7006.894	4322.741	7006.775	0	67	0	2.8	200

Mean % Reg Sp per Trip (Hung Tows Removed)

Table 19, Continued. Whiting Grate Raised Footrope Sweepless Trawl Trials: 50mm bar spacing, 2-1/2 inch Cod End Mesh 2002 Tow Data: Whiting Trials: F/V North Star.

	Tow	Whiting	Reg. Sp.	Total	Percent	Percent	Comments:
	1000	kg	kg	Catch	Bycat/Tow	Bycat/Trip	
		K9	N9	kg	Reg.Sp.	Reg.Sp.	
-	1	60	2.8	68.7	4.08	ricg.op.	
	2	70.7	4.5	93.6	4.81		
	3	98	7	148.2	4.72		
	3 4	195.6	5.5	212.4	2.59	3.79	
	5	54.85	1	66.2	1.51	0.70	
	5 6	80.25	1.1	94.5	1.16	1.51	*Comments: net tangled in gill net
	7	76.6	2.85	102	2.79		Total and the same of the same
	8	22.65	23.3	59.9	38.93		Comments: 21.55 kg redfish
	9	176.6	6.2	198.6	3.12		ig round.
	10	52.65	14.25	95.8	14.88	8.97	*Comments: net torn, hole ~10 ft across, V to ~8ft
	11	15	1.55	21.7	7.14		(Reason for 9.4 kg flounders? Ghost gear).
	12	6.6	2.65	19.5	13.58		The state of the party of the p
	13	42.6	1.05	69.8	1.51		
	14	148.8	5.35	202.5	2.64	3.38	
	15	105.8	2.4	125.3	1.92		
	16	40.8	0.9	50	1.8		
	17	163.85	5	185.4	2.7		
	18	98.7	2.75	115	2.39		
	19	21.2	0.15	22.4	0.67	2.32	*Comments: pulled up after 15 min. b/c of ghost gear -
	20	121.45	4.35	134.5	3.24		(fishing vessel using gill nets nearby).
	21	79.3	1.6	102.7	1.56		
	22	96.9	0.85	123.8	0.69		
	23	37.6	2.2	71.3	3.09	2.08	
	24	23.5	1.3	33.7	3.86		
	25	34.3	1.3	44.2	2.94		
	26	68.7	5.4	121.4	4.45	4.01	
	27	47.3	0.6	55.4	1.08		*0
	28 29	47.2 114.8	0.1 3.75	62.8	0.16		*Comments: Used 2 inch cod end mesh
	30	56.4	0.7	132.2 68.9	2.84		*Comments: Used 2 inch cod end mesh
	31	35.7	0.7	43.7	1.02 1.15	1.08	*Comments: Used 2 inch cod end mesh *Comments: Used 2 inch cod end mesh
	32	118.85	6.1	148.9	4.1	1.00	Comments. Osed 2 inch cod end mesh
	33	36.05	3.95	69.9	5.65		Comments: 1/2 of tow in 80 FA, 2.35 kg white hake
	34	73.9	3.4	93.1	3.65	4.31	1/2 of tow in oo 1 A, 2.55 kg write flake
	35	148	3.4	196.4	1.73	4.01	
	36	43.2	1.05	87.8	1.2		
	37	140	1.85	159.8	1.16		
	38	97.2	1.8	111.4	1.62		
	39	85.8	3.35	103.4	3.24	1.74	
	40	12	0	17.3	0	over the same	
	41	45.7	8.35	71.3	11.72		Comments: 5.2 kg white hake
	42	19.2	59.2	101.8	58.14		Comments: 55 kg redfish
	43	24	0.07	30.9	0.23	30.56	•
		Sum	205.47	4138.1			
		Mean	5.14	100.49	5.82	5.80	

Table 20. Whiting Grate Raised Footrope Sweepless Trawl Tows, October - November, 2002 F/V North Star. Mean Catch/Tow by Species & % Bycatch Reg. Species

Date		10/15/2002	10/15/2002	10/15/2002	10/21/2002	10/22/2002	10/22/2002	10/22/2002	10/23/2002
Tow Number	1	2	3	4	5	7	8	9	11
Species	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)	Wt. (kg)
Shrimp	0.05	0.25	0.65	0.05	0.05	0.1	0.35	0.3	0.01
Whiting/Silver Hake	60	70.7	98	195.6	54.85	76.6	22.65	176.6	15
EXP Whiting	60	70.7	98	195.6	54.85	76.6	22.65	176.6	15
Red Hake (Ling)	3.75	15.85	42.2	9	4.9	9.4	7.7	12.2	2.05
White Hake	1.35	3	2	2.35	0.7	2.5	1.4	4.7	1.5
Redfish	0	0.15	1.45	1.2	0.05	0	21.55	0.2	
American Plaice (Dab)	0.75	0.35	1.45	1.25	0.25	0.15	0.15	0.35	0.05
Gray Sole (Witch Flounder)	0	1	2.1	0.7	0	0.2	0.2	0.75	
Windowpane Flounder (Sand Dab)	0	0	0	0	0	0	0	0	0
Winter Flounder (Blackback)	0	0	0	0	0	0	0	0	0
Yellowtail Flounder	0	0	0	0	0	0	0	0	0
Cod	0	0	0	0	0	0	0	0	0
Haddock	0	0	0	0	0	0	0	0	0
Pollock	0.7	0	0	0	0	0	0	0.2	0
Herring	0	0.75	0	0.2	4.25	6.2	4.35	1.3	0.25
Alewife	0.35	0	0	0	0	6	0.25	0	2.75
Illex	0.2	0.1	0.15	0	0.6	0.2	0.3	0.15	0.1
Butterfish	0	0.05	0	0	0	0	0	0	0
Sculpin	0	0	0	0	0	0	0	0	0
Skate	0	0	0	0	0	0	0	0	0
Spiny Dog/Dogfish	1.55	1.4	0	2	0	0	0.95	1.3	0
Monkfish/Goosefish	0	0	0	0	0	0	0	0	0
Scallop	0	0	0.15	0	0	0	0	0	0
mackeral	0	0	0	0	0	0	0	0	0
shad	0	0	0	0	0.5	0.65	0	0	0
Four Spot Flounder	0	0	0	0	0	0	0	0	0
Wrymouth	0	0	0	0	0	0	0	0	0
Spider Crab	0	0	0	0	0	0	0	0	0
Lobster	0	0	0	0	0	0	0	0.55	0
Jonah Crab	0	0	0.05	0.05	0	0	0	0	0
Rock Crab	0	0	0	0	0.05	0	0	0	0
Total Catch	68.7	93.6	148.2	212.4	66.2	102.0	59.9	198.6	21.7
Bycatch Regulated Species	2.8	4.5	7	5.5	1	2.85	23.3	6.2	1.55
Percent Bycatch	4.08	4.81	4.72	2.59	1.51	2.79	38.93	3.12	7.14

Table 20, Continued. Whiting Grate Raised Footrope Sweepless Trawl Tows, October - November, 2002 F/V North Star. Mean Catch/Tow by Species & % Bycatch Reg. Species

10/23/2002 10/23/2002 10/23/2002 10/24/2002 10/24/2002 10/24/2002 10/24/2002 10/25/2000 10/25/2000 10/25/2000 10/25/2000 10/25/2000 10/25/2000 1 12 13 14 15 16 17 18 20 21 22 23 24 25 Wt. (kg) 0.01 0.45 0.01 3 0 0.1 0.01 0 0 0.01 6.6 42.6 148.8 105.8 40.8 163.85 98.7 121.45 79.3 96.9 37.6 23.5 34.3 6.6 42.6 148.8 105.8 40.8 163.85 98.7 79.3 121.45 96.9 37.6 23.5 34.3 0.85 2.8 15.6 10.1 5.7 11.9 7.1 6.5 2.2 1.6 1.95 0.85 4.4 2.25 0 3.1 2.1 0 1.3 1.3 3.35 1.45 0.55 1.65 0.7 1.2 0 0 0 0 0.5 0.1 0 0 0 0 0 0 0.15 0.4 1.7 0.2 0.4 1.5 0.5 1 0.15 0.3 0.55 0.6 0.1 0.25 0.5 0.55 0.1 0 1.6 0.35 0.6 0.15 0 0 0 0.5 0 0 0 0 0 0 0 20 2.6 15.2 1.4 1.2 0.8 0.9 0.45 12.8 14.4 8.6 0.2 0.65 4.1 6.8 8.4 4.2 0.4 0.3 3.1 0.85 4.25 7.4 15.4 5.5 1.9 0.1 0 0.95 1.1 0.5 0.5 1.05 0.85 1.85 1.35 0.75 2.05 0.3 0.05 0 0.15 0 0 0 0 0 0 0 0.2 0.1 0.1 0 1.85 0 0 0 0.3 0.1 1.3 0 0 0.4 3.6 0 0.1 0 0 0 0 0 0.6 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0.1 0.7 0.85 0 0.1 0.2 0.1 0 0 0.6 0.9 0.95 0.1 0.1 0.95 0 0 0 0 0 0.01 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0.2 0 2.1 0.1 0 0 0 0 0 0 19.5 69.8 202.5 125.3 50.0 185.4 115.0 134.5 102.7 123.8 71.3 33.7 44.2 2.65 1.05 5.35 2.4 0.9 5 2.75 4.35 0.85 2.2 1.6 1.3 1.3 13.58 1.51 2.64 1.92 1.80 2.70 2.39 3.24 1.56 0.69 3.09 3.86 2.94

Table 20, Continued. Whiting Grate Raised Footrope Sweepless Trawl Tows, October - November, 2002 F/V North Star. Mean Catch/Tow by Species & % Bycatch Reg. Species

10/28/2002 10/31/2002 11/1/2002 11/1/2002 11/1/2002 11/3/2002 11/3/2002 11/3/2002 11/3/2002 11/3/2002 11/20/2002 11/20/2002 11/20/2002 11/20/2002 26 27 32 33 34 35 36 37 38 39 40 41 42 43 Wt. (kg) 0 0.05 1.45 0 0.05 0.05 0.04 1.01 3.5 0 68.7 47.3 118.85 36.05 73.9 148 43.2 140 97.2 85.8 12 45.7 19.2 24 68.7 47.3 118.85 36.05 73.9 148 43.2 140 97.2 85.8 12 45.7 19.2 24 15.7 1.6 18.8 24.4 11.2 19.6 9.5 12.2 7.2 11.4 5 16.1 17.5 5.7 2 0.4 4.8 2.35 2.7 0.5 0.7 0.7 0.7 0.8 0 5.2 4.1 0 2.6 0.2 0 0 0 0 0.05 0 0.05 0.05 0 55 3.1 0 0.7 0.2 1.2 0.3 0.3 1.6 0.3 0.45 0.25 1.3 0 0 0.05 0.04 0.1 0.1 0 1.1 0.1 1.3 0 0.7 0.8 0 0.05 0.05 0.03 0.2 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0 0 0 27.2 2.6 0.35 0 1.5 22 32.3 4 3.6 0.5 0 0.03 0.06 0.01 1.6 2.5 3 0 0.75 1.1 0.5 0.7 1.2 0.95 0.04 0 0 0.06 0.7 0 1.65 1.55 1.6 2.2 0.7 0.4 0.2 0.85 0.15 0.05 0.01 0.05 0.05 0.05 0 0.2 0 0 0.05 0 0 0.01 0.01 0 0.01 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0.5 0 0 0 0 0 0 2.3 0 0 0 0.25 0 0 1.45 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.25 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0.05 0.05 0 0 0 0 0.01 0.01 0.01 0 0.3 0 0 0 0 0 0.3 0 0 0 0.01 0 0 0 0.4 0.7 0.2 0 0 0 0.2 0.5 0.1 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0.3 0.5 0 0 0 0 0 0.05 0 0 0 0 0.1 0 0 0 0 0.05 0 0.05 0 0 0 0 0.05 0 121.4 55.4 148.9 69.9 93.1 196.4 87.8 159.8 111.4 103.4 17.3 71.3 101.8 30.9 5.4 0.6 6.1 3.95 3.4 3.4 1.05 1.85 1.8 3.35 0 8.35 59.2 0.07 4.45 1.08 4.10 5.65 3.65 1.73 1.20 1.16 1.62 3.24 0.00 11.72 58.14 0.23

Table 21. Whiting Grate Raised Footrope Sweepless Trawl Tows, October - November, 2002. F/V North Star. Mean Catch/Tow by Species & Percent Bycatch of Regulated Species

Tot Cat /Tow Mean Cat/Tow

	Tot.Cat./Tow	Mean Cat/Tow	
	36 Tows	kg	
Shrimp	12.55	0.35	
Whiting/Silver Hake	2730.1	75.84	
Expanded Whiting	2730.1	75.84	
Red Hake (Ling)	354.5	9.85	
White Hake	63.4	1.76	
Redfish	86.25	2.40	
American Plaice (Dab)	18.99	0.53	
Gray Sole (Witch Flounder)	13.63	0.38	
Windowpane Flounder (Sand Dab)	0	0.00	
Winter Flounder (Blackback)	0	0.00	
Yellowtail Flounder	0	0.00	
Cod	0.6	0.02	
Haddock	0.2	0.01	
Pollock	1.85	0.05	
Herring	190.65	5.30	
Alewife	84.35	2.34	
Illex	24.21	0.67	
Butterfish	1.08	0.03	
Sculpin	0.1	0.00	
Skate	2.8	0.08	
Spiny Dog/Dogfish	16.55	0.46	
Monkfish/Goosefish	0.85	0.02	
Scallop	0.43	0.01	
mackeral	0.81	0.02	
shad	7.86	0.22	
Four Spot Flounder	0.3	0.01	
Wrymouth	0.95	0.03	
Spider Crab	0.01	0.00	
Lobster	0.55	0.02	
Jonah Crab	0.85	0.02	
Rock Crab	2.7	0.08	
Total Catch kg	3617.12	100.48	
Reg. Sp. Bycatch Total kg	184.92	5.14	
Percent Bycatch	5.11	5.11	

Table 22. Whiting Grate Raised Footrope Sweepless Trawl Trials: 50mm bar spacing. Comparison of 3 Inch Cod End Mesh with 2-1/2 Inch Cod End Mesh. Fall, 2002. F/V North Star and F/V Tenacious 16 Paired Tows. Tow Date, Time, Location, Depth, Total Catch, Whiting Catch, Regulated Species Bycatch.

Vessel	Date	Tow	Begin	End	Begin	Begin	End	End	Water	Depth	Depth	Tow	Wire	T	0-15-1	VA H- 241	I D . O		
			Time	Time	Lat	Long	Lat	Long	Temp	Haul Start	Haul End	Speed	Out	Tow	Cod End Mesh	Whiting	Reg. Sp.	Total	Percent
								Long	(oF)	(fm)	(fm)	(kt)	(fm)		iviesti	kg	kg	Catch	Bycat/Tow
								1	\-'/	1 ()	(iiii)	(ne)	(1111)					kg	Reg.Sp.
2-1/2 Inch C	od End Tows																		
_																			
Tenacious	11/19/2002	1	8:10	9:10	4328.49	6958.52	4329.93	6955.71		67.2	66	2.4	175	1	2.5	0	0	2.4	0
Tenacious	11/19/2002	2	9:50	10:50	4330.72	6954.06	4328.38	6956.65		62.8	68.2	2.4	200	2	2.5	9	1.2	21.7	5.53
North Star	11/19/2002	3	11:37	12:41	4327.744		4325.843	6956.515	0	79.4	77.5	2.4	225	3	2.5	94.5	12	145.5	8.25
North Star	11/19/2002	4	13:16	14:18	4325.45	6957.7	4323.778		0	75	78.8	2.4	225	4	2.5	111.2	9.95	152.1	6.54
North Star	11/19/2002	5	14:53	15:54	4324.85	7000.7	4326.092	6958.24	0	73	69.9	2.4	200	5	2.5	78.4	6	107.8	5.57
North Star	11/21/2002	6	7:52	8:56	4326.06	6956.82	4327.90	6954.53		77.0		2.3	225	6	2.5	35	5.21	61.6	8.46
North Star	11/21/2002	/	9:18	10:20	4327.54	6954.75	4325.74	6956.92		76.0	77.0	2.4	225	7	2.5	38	5.91	60.2	9.81
Tenacious	11/21/2002	8	10:51	11:47	4325.87	6957.33	4324.74	6959.88	0	75.8	73.4	2.3	225	8	2.5	36	1.4	111.7	1.25
Tenacious	11/21/2002	9	12:15	13:15	4324.96	7000.52	4326.01	6957.83	0	74.6	75	2.3	200	9	2.5	9	2.05	50.8	4.04
Tenacious	11/21/2002	10	13:38	14:14	4326.2	6957.55	4327.53	6956.93	0	76.7	73.2	2.3	200	10	2.5	1.3	1.5	38.6	3.88
Tenacious	11/25/2002	11	8:49	9:49	4323.13	7006	4320.84	7005.94		72.1	72.3	2.2	200	11	2.5	5.2	0.95	30.1	3.16
Tenacious	11/25/2002	12	10:08	11:07	4320.45	7005.79	4318.5	7007.08		76.2	75.3	2.3	225	12	2.5	25	2.35	79.1	2.97
Tenacious	11/25/2002	13	11:31	12:40	4318.6	7006.9	4320.96	7005.99	0	74.3	73.7	2.3	225	13	2.5	40	2.45	8.44	2.9
North Star	11/26/2002	14	7:44	8:36	4326.013	7005.585		7004.806		66.9	69.4	2.4	200	14	2.5	11	3.55	21.5	16.55
North Star	11/26/2002	15	8:56	9:43	4324.318	7004.592	4326.059	7005.405		67	68.7	2.4	200	15	2.5	53	20.4	107.9	18.91
North Star	11/26/2002	16	10:15	11:07	4326.11	7005.48	4327.897	7004.757	0	67	62.6	2.5	200	16	2.5	32	15.4	70.1	21.97
Olash Osd F	- 4 T															Mean	Percent By	catch	7.99
3 Inch Cod E	ind Tows																Std. Dev.		6.31
North Star	11/19/2002	1	9.00	0.45	4000 504	0050 000	1000 100												
North Star	11/19/2002	2	8:09	9:15	4328.591			6955.524		67.5	65.1	2.4 - 2.5	175	1	3	4.4	0.3	5.7	5.31
Tenacious	11/19/2002	3	9:47	10:52	4330.724			6956.435		63.5	67.9	2.4 - 2.5	200	2	3	12.85	0.2	15.5	1.29
Tenacious	11/19/2002	4	11:43	12:45	4328.04	6954.46	4325.73	6956.84	0	79.3	76	2.4	200	3	3	36.4	7	83.1	8.42
Tenacious	11/19/2002	5	13:18 14"53	14:18	4325.68	6957.46	4323.8	6959.84	0	75.6	81.3	2.5	225	4	3	41	2.1	79.7	2.64
Tenacious	11/21/2002	6		15:55	4324.6	7000.73	4326.12	6958.54	0	78.2	70.3	2.3	200	5	3	13	0.85	33.8	2.51
Tenacious	11/21/2002	7	7:50	8:54	4326.29	6957.06	4327.76	6954.83		72.3	74.1	2.2	200	6	3	35.3	3.85	113.2	3.4
North Star	11/21/2002	8	9:21	10:20	4327.77	6954.86	4325.85	6956.92		74.8	75.5	2.3	225	7	3	27	5.1	98.5	5.16
North Star	11/21/2002	9	10:53	11:45	4325.66	6957.31	4324.77	6959.74	0	76.0	75.4	2.4	225	8	3	90	7.73	119.6	6.46
North Star	11/21/2002	10	12:15	13:15	4325.03	7000.54	4325.95	6957.89		72.5	76.6	2.4	225	9	3	17	4.35	30.9	14.06
North Star	11/21/2002	11	13:40 8:45	14:40	4326.26	6957.60	4327.80	6958.28		72.0	66.2	2.4	200	10	3	22	112.4	144.8	77.63
North Star	11/25/2002	12	10:11	9:47			4320.849			68	73	2.4	200	11	3	38.8	2.2	53	4.15
North Star	11/25/2002	13		11:11	4320.64		4318.598			74	76.4	2.4	225	12	3	33.8	4.6	53.3	8.63
Tenacious	11/25/2002	13	11:35	12:35	4318.9	7006.65		7006.144	0	75	74	2.5	225	13	3	52	1.2	74.2	1.62
Tenacious	11/26/2002		7:48	8:36	4326.93	7005.7	4324.26	7004.92		65.4	69.7	2.3	200	14	3	10.5	1.9	24.6	7.74
Tenacious	11/26/2002	15 16	8:58	9:46	4324.15	7004.93	4326.13	7005.49		71.8	67.6	2.3	200	15	3	32.5	8.35	63.4	13.17
renacious	11/20/2002	10	10:10	11:19	4326	7005.46	4327.87	7004.65	0	68.7	63.5	2.3	200	16	3	21	11	54.8	20.09
																Mean	Percent Byo	catch	11.39
																	Std. Dev.		18.39

Table 23. Catch by Species for Cod End Mesh Comparison, 2-1/2 Inch vs 3 Inch Diamond Mesh. Whiting Grate Raised Footrope Sweepless Trawl, Coastal Maine, Fall, 2002. 3 Inch Cod End.
3"Codend

				3"Codend						
Tow#	1	2	3	4	5	6	7	8	9	10
Vessel	NS	NS	Ten	Ten	Ten	Ten	Ten	NS	NS	NS
Date	11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/21/2002	11/21/2002	11/21/2002	11/21/2002	11/21/2002
Tow Duration (min)	66	65	62	60	62	64	59	52	60	60
Species	Wt(kg)									
Shrimp	0.05	0.15	0.5	0.75	0.2	0.7	0.6	0.07	0.04	0.06
Whiting/Silver Hake	4.4	12.85	36.4	41	13	35.3	27	90	17	22
EXP Whiting	4.4	12.85	36.4	41	13	35.3	27	90	17	22
Red Hake (Ling)	0.1	1.55	9	6.5	2	11	4	17.2	5	5.5
White Hake	0.15	0	6	1.2	0.2	1.3	3.3	4.3	0	3.5
Redfish	0	0	0	0.1	0	0	0	0.03	4.3	105
American Plaice (Dab)	0.15	0.15	0.4	0.3	0.1	1	0.2	2.1	0.05	2
Gray Sole (Witch Flounder)	0	0	0.6	0.5	0.55	1.55	1.6	1.3	0	1.9
Windowpane Flounder (Sand Dab)		0	0	0	0	0	0	0	0	0
Winter Flounder (Blackback)	0	0	0	0	0	0	0	0	0	0
Yellowtail Flounder	0	0	0	0	0	0	0	0	0	0
Cod	0	0	0	0	0	0	0	0	0	0
Haddock	0	0	0	0	0	0	0	0	0	0
Pollock	0	0.05	0	0	0	0	0	0	0	0
Herring	0.2	0.05	1	0	0.78	0.2	0.15	0.02	0	0.02
Alewife	0	0	0	0	0.1	0.45	0	0	0.06	0.01
Illex	0.3	0.25	0.55	0.8	0.5	0.75	0	0.03	0.06	0.05
Butterfish	0.05	0.15	0.55	0.35	0.3	0.25	0.35	0.01	0.02	0.03
Sculpin	0	0	0	0	0	0	0	0	0	0
Skate	0	0	0	0	0	0	0	0	0	0
Spiny Dog/Dogfish	0	0	27	27.7	16	58.6	59.7	4.5	4.3	3.6
Monkfish/Goosefish	0	0	0.55	0.1	0	0.9	0	0	0	0.01
Scallop	0	0	0.15	0.1	0.05	0.6	0.9	0	0.01	0.01
Mackeral	0.15	0.3	0.05	0.1	0.05	0.4	0	0	0.09	1.02
Shad	0.1	0	0	0.12	0	0	0	0.01	0	0.01
Other*	0	0	0.05	0.05	0	0	0.05	0	0	0
Other	0	0	0.05	0	0	0	0	0	0	0.01
Other	0	0	0.2	0	0	0	0.65	0	0	0.04
Lobster	0	0	0	0	0	0	0	0	0	0
Jonah Crab	0	0	0	0	0	0.2	0	0	0	0
Rock Crab	0	0	0	0	0	0	0	0	0	0.02
Total Catch	5.7	15.5	83.1	79.7	33.8	113.2	98.5	119.6	30.9	144.8
Bycatch Ratio	0.053	0.013	0.084	0.026	0.025	0.034	0.052	0.065	0.141	0.776
Bycatch Regulated Species	0.3	0.2	7	2.1	0.85	3.85	5.1	7.73	4.35	112.4
Catch less Spiny Dogfish**	5.7	15.5	56.1	52.0	17.8	54.6	38.8	115.1	26.6	141.2
Bycatch Ratio	0.053	0.013	0.125	0.040	0.048	0.071	0.131	0.067	0.163	0.796

^{*}Other species are mixed between tows and include: Shad, Starfish, Scup, 4 Spot Flounder, Black Sea Bass, Cusk, Jon Dory, Spider Crab, Summer Flounder, Wrymouth, Conch, Sea Robin, Northern Pipefish. Usually 1 per tow.

**Spiny Dogfish retained ahead of grate counted as catch

Table 23, Continued. Catch by Species for Cod End Mesh Comparison, 2-1/2 Inch vs 3 Inch Diamond Mesh. Whiting Grate Raised Footrope Sweepless Trawl, Coastal Maine, Fall, 2002. 3 Inch Cod End.

		3"Codend			viaille, Fall, 2				Tenacious	North Star
11	12	13	14	15	16	Total	Mean/tow	Mean/60min	Mean/60min	Mean/60min
NS	NS	NS	Ten	Ten	Ten					
11/25/2002					11/26/2002					
62	60	60	48	48	69	957	59.8125			
Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)					
0.55	0.5	1.5	0.05	1.3	2.45	9.47	0.59	0.59	0.81	0.36
38.8	33.8	52	10.5	32.5	21	487.55	30.47	31.46	27.67	35.26
38.8	33.8	52	10.5	32.5	21	487.55	30.47	31.46	27.67	35.26
9.6	12.4	18.2	1.4	10	8	121.45	7.59	7.78	6.59	8.97
1.4	1.55	0.4	0.45	4.3	5	33.05	2.07	2.12	2.76	1.49
0.05	0	0.3	0	0.15	0	109.93	6.87	6.87	0.04	13.71
0.25	0.4	0.4	0.4	1.1	1.25	10.25	0.64	0.67	0.61	0.72
0.5	0.3	0.1	0.2	1.5	4.75	15.35	0.96	0.95	1.37	0.54
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	1.3	0	1.30	0.08	0.10	0.20	0.00
0	2.35	0	0.85	0	0	3.20	0.20	0.21	0.13	0.29
0	0	0	0	0	0	0.05	0.00	0.00	0.00	0.01
0.3	0.2	0	0	0	0	2.92	0.18	0.18	0.26	0.10
0.75	0.7	0.35	0.25	0.16	0.1	2.93	0.18	0.19	0.14	0.23
0.35	0.55	0.25	0.15	0.5	0.05	5.14	0.32	0.32	0.42	0.22
0	0	0	0	0	0	2.06	0.13	0.13	0.22	0.03
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0.1	0.35	0.15	10	9	10	231.00	14.44	14.44	27.18	1.71
0	0	0	0.3	0	1	2.86	0.18	0.17	0.34	0.00
0	0.1	0.05	0	0	0.05	2.02	0.13	0.12	0.23	0.02
0.2	0	0.45	0	0.25	0.35	3.41	0.21	0.21	0.15	0.27
0.1	0	0	0	0	0	0.34	0.02	0.02	0.02	0.03
0	0	0	0	0	0	0.15	0.01	0.01	0.02	0.00
0	0	0	0	0	0.15	0.21	0.01	0.01	0.02	0.00
0.05	0.1	0	0	0.05	0.05	1.14	0.07	0.07	0.12	0.02
0	0	0	0	1.15	0	1.15	0.07	0.09	0.18	0.00
0	0	0	0	0.15	0.55	0.90	0.06	0.05	0.11	0.00
0	0	0	0	0	0	0.02	0.00	0.00	0.00	0.00
53.0	53.3	74.2	24.6	63.4	54.8	1047.85	65.49	66.78	69.58	63.98
0.042	0.086	0.016	0.077	0.132	0.201	0.165	0.165	0.164	0.073	0.262
2.2	4.6	1.2	1.9	8.35	11	173.13	10.82	10.93	5.11	16.76
52.9	53.0	74.0	14.6	54.4	44.8	816.9	51.1	52.3	42.4	62.3
0.042	0.087	0.016	0.131	0.153	0.246	0.212	0.212	0.209	0.120	0.269
Other specie	es are mixed	between tow	s and include	e: Shad, Star	fish, Scup, 4	Spot Flour	nder,		www.com.	
Black Sea B	ass, Cusk, Jo	on Dory, Spid	ler Crab, Sur	nmer Flound	er, Wrymouth	, Conch,		Mean % Byc.w.	/o dog	13.64
Sea Robin, Northern Pipefish. Usually 1 per tow.										0.187
O-1	ob rotained a	bood of and		2211						
*Spiny Dogfi	sir retained a	mead of grat	e counted as	catch				Mean % B.w/o	hi red	9.24

Table 24. Catch by Species for Cod End Mesh Comparison, 2-1/2 Inch vs 3 Inch Diamond Mesh. Whiting Grate Raised Footrope Sweepless Trawl, Coastal Maine, Fall, 2002. 2-1/2 Inch Cod End.

				2.5" Codeno						
Tow#	1	2	3	4	5	6	7	8	9	10
Vessel	Ten	Ten	NS	NS	NS	NS	NS	Ten	Ten	Ten
Date	11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/21/2002	11/21/2002	11/21/2002	11/21/2002	11/21/2002
	60	60	64	62	61	64	62	56	60	36
	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)
Shrimp	0	0.2	2.3	0.95	0.7	1	0.06	0.65	0.5	0.2
Whiting/Silver Hake	0	9	94.5	111.2	78.4	35	38	36	9	1.3
EXP Whiting	0	9	94.5	111.2	78.4	35	38	36	9	1.3
Red Hake (Ling)	0	0.5	30	23.6	18.2	16.5	10.1	3.3	3	0.9
White Hake	0	0.75	7.6	5.5	2.15	2.5	2.2	0.3	0.8	0.65
Redfish	0	0	0.2	0.05	1.7	0.01	0.01	0	0.1	0
American Plaice (Dab)	0	0.35	0.55	2	0.55	1.2	1.2	0.85	0.45	0.2
Gray Sole (Witch Flounder)	0	0.1	3.4	2.4	1.4	1.5	2.5	0.25	0.7	0.05
Windowpane Flounder (Sand Dab)	0	0	0	0	0	0	0	0	0	0
Winter Flounder (Blackback)	0	0	0	0	0	0	0	0	0	0
Yellowtail Flounder	0	0	0	0	0	0	0	0	0	0
Cod	0	0	0	0	0	0	0	0	0	0.6
Haddock	0	0	0	0	0	0	0	0	0	0
Pollock	0	0	0.25	0	0.2	0	0	0	0	0
Herring	0	0	1	0.95	1	0	0.05	0	0	0
Alewife	0.3	0	0	0	1.4	0	0	0.05	0	0.15
Illex	0	0.2	1.45	0.7	1.05	1.5	0.05	0.2	0.23	0
Butterfish	0	0	0.7	0.05	0.2	0.03	0.02	0.15	0.1	0.05
Sculpin	0	0	0	0	0	0	0	0	0	0
Skate	0	0	1.6	0	0	0	0	1.9	0	0
Spiny Dog/Dogfish	2	10.5	1.4	3.8	0	2.3	5	67.9	35.8	33.3
Monkfish/Goosefish	0	0	0	0.35	0	0	0.01	0	0	1
Scallop	0	0.05	0.2	0.1	0.25	0.05	1	0.1	0.05	0.15
Mackeral	0.1	0.05	0.05	0.2	0.2	0.01	0.02	0	0.05	0
Shad	0	0	0.25	0.15	0	0.01	0	0	0	0
Other*	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0.05	0.05	0.05
Lobster	0	0	0	0	0	0	0	0	0	0
Jonah Crab	0	0	0	0.05	0.35	0	0	0	0	0
Rock Crab	0	0	0	0	0	0	0	0	0	0
Total Catch	2.4	21.7	145.5	152.1	107.8	61.6	60.2	111.7	50.8	38.6
Bycatch Ratio	0.000	0.055	0.083	0.065	0.056	0.085	0.098	0.013	0.040	0.039
Bycatch Regulated Species		1.2	12	9.95	6	5.21	5.91	1.4	2.05	1.5
Catch less Spiny Dogfish**	0.4	11.2	144.1	148.3	107.8	59.3	55.2	43.8	15.0	5.3
Bycatch Ratio	0.000	0.107	0.083	0.067	0.056	0.088	0.107	0.032	0.136	0.283
+041										

*Other species are mixed between tows and include: Shad, Starfish, Scup, 4 Spot Flounder, Black Sea Bass, Cusk, Jon Dory, Spider Crab, Summer Flounder, Wrymouth, Conch, Sea Robin, Northern Pipefish. Usually 1 per tow.

^{**}Spiny Dogfish retained ahead of grate counted as catch

Table 24, Continued. Catch by Species for Cod End Mesh Comparison, 2-1/2 Inch vs 3 Inch Diamond Mesh. Whiting Grate Raised Footrope Sweepless Trawl, Coastal Maine, Fall, 2002. 2-1/2 Inch Cod End. 2.5" Codend

		2.5" Codend	l							
11	12	13	14	15	16				Tenacious	North Star
Ten	Ten	Ten	NS	NS	NS	Total	Mean/tow	Mean/60min		
	11/25/2002			11/26/2002	11/26/2002					cam.commi
60	59	69	52	47	52	924.00	57.75			
Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)	Wt(kg)					
0.3	1.2	1.7	1	2.3	2.4	15.46	0.97	1.05	0.59	1.45
5.2	25	40	11	53	32	578.60	36.16	37.08	15.52	57.52
5.2	25	40	11	53	32	578.60	36.16	37.08	15.52	57.52
2.5	8	21	5	31.25	18	191.85	11.99	12.56	4.68	20.07
0.3	1	0.55	3.55	15.2	13.2	56.25	3.52	3.96	0.59	7.22
0.05	0.15	0	0	0.35	0	2.62	0.16	0.17	0.04	0.30
0.5	0.65	0.9	0	1.8	0.95	12.15	0.76	0.82	0.50	1.08
0.1	0.55	1	0	3.05	1.25	18.25	1.14	1.21	0.34	2.01
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.60	0.04	0.06	0.13	0.00
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0.45	0.03	0.03	0.00	0.05
0	0	0	0.15	0	0	3.15	0.20	0.19	0.00	0.38
0.25	0.3	0	0.2	0.45	0.2	3.30	0.21	0.22	0.14	0.30
0.25	0.6	0.5	0.55	0.4	0.65	8.33	0.52	0.54	0.24	0.80
0	0	0	0	0	0	1.30	0.08	0.09	0.04	0.12
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	3.50	0.22	0.22	0.25	0.19
20	41.1	18	0	0	1.4	242.50	15.16	18.96	31.75	1.70
0	0	0	0	0	0	1.36	0.09	0.13	0.21	0.04
0	0.2	0.3	0	0	0	2.45	0.15	0.16	0.12	0.19
0.2	0	0	0	0	0	0.88	0.06	0.06	0.05	0.06
0	0	0	0	0	0	0.41	0.03	0.02	0.00	0.05
0	0	0	0	0.1	0	0.10	0.01	0.01	0.00	0.02
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
0	0.05	0.05	0	0	0.05	0.30	0.02	0.02	0.04	0.01
0.45	0	0.4	0	0	0	0.85	0.05	0.05	0.10	0.00
0	0.3	0	0	0	0	0.70	0.04	0.04	0.04	0.05
0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
30.1	79.1	84.4	21.5	107.9	70.1	1145.36	71.59	77.66	55.36	93.61
0.032	0.030	0.029	0.166	0.189	0.220	0.079	0.079	0.08	0.03	0.11
0.95	2.35	2.45	3.55	20.4	15.4	90.32	5.645	6.254	1.590	10.662
10.1	38.0	66.4	21.5	107.9	68.7	902.9	56.4	58.7	23.6	91.9
0.094	0.062	0.037	0.166	0.189	0.224	0.100	0.100	0.107	0.067	0.116
Other specie	es are mixed	between tows	and include	: Shad, Starf	ish, Scup, 4	Spot Flound	der,			
Black Sea Bass, Cusk, Jon Dory, Spider Crab, Summer Flounder, Wrymouth, Conch, Sea Robin, Northern Pipefish. Usually 1 per tow. Mean % B w/o dogs 11.54 Std dev 0.072										
Sea Robin, N	orthern Pipe	tish. Usually	1 per tow.					Std dev		0.072
"Spiny Dogf	ish retained a	ahead of grate	counted as	catch						

*Spiny Dogfish retained ahead of grate counted as catch

Table 25. Catch by Species for Cod End Mesh Comparison, 2-1/2 Inch vs 3 Inch Diamond Mesh. Whiting Grate Raised Footrope Sweepless Trawl, Coastal Maine, Fall, 2002.

Sum 16 Tows Mean Wt./ 60 min. To											
Species		2.5" Cod End									
	Wt (kg)	Wt (kg)	Wt (kg)	Wt (kg)							
Shrimp	9.47	15.46	0.59	1.05							
Whiting/Silver Hake	487.55	578.6	31.46	37.08							
EXP Whiting	487.55	578.6	31.46	37.08							
Red Hake (Ling)	121.45	191.85	7.78	12.56							
White Hake	33.05	56.25	2.12	3.96							
Redfish*	109.93	2.62	6.87	0.17							
American Plaice (Dab)	10.25	12.15	0.67	0.82							
Gray Sole (Witch Flounder)	15.35	18.25	0.95	1.21							
Windowpane Flounder (Sand Dab)	0	0	0.00	0.00							
Winter Flounder (Blackback)	0	0	0.00	0.00							
Yellowtail Flounder	0	0	0.00	0.00							
Cod	1.3	0.6	0.10	0.06							
Haddock	3.2	0	0.21	0.00							
Pollock	0.05	0.45	0.00	0.03							
Herring	2.92	3.15	0.18	0.19							
Alewife	2.93	3.3	0.19	0.22							
Illex	5.14	8.33	0.32	0.54							
Butterfish	2.06	1.3	0.13	0.09							
Sculpin	0	0	0.00	0.00							
Skate	0	3.5	0.00	0.22							
Spiny Dog/Dogfish	231	242.5	14.44	18.96							
Monkfish/Goosefish	2.86	1.36	0.17	0.13							
Scallop	2.02	2.45	0.12	0.16							
Mackeral	3.41	0.88	0.21	0.06							
Shad	0.34	0.41	0.02	0.02							
Other**	1.17	0	0.01	0.01							
Other	0.21	0	0.01	0.00							
Other	0.05	0	0.07	0.02							
Lobster	1.15	0.85	0.09	0.05							
Jonah Crab	0.9	0.7	0.05	0.04							
Rock Crab	0.02	0	0.00	0.00							
Total Catch	1047.9	1145.36	66.78	77.66							
Bycatch Ratio	0.165	0.079	0.164	0.081							
Bycatch Regulated Species	173.13	90.32	10.93	6.25							
Total Catch less Spiny Dogfish***	816.9	902.9	52.34	58.70							
Bycatch Ratio	0.212	0.100	0.209	0.107							

^{*1} tow with 3 inch cod end had 105kg redfish.

^{**} Other species are mixed between tows and include: Shad, Starfish, Scup, 4 Spot Flounder, Black Sea Bass, Cusk, Jon Dory, Spider Crab, Summer Flounder, Wrymouth, Conch, Sea Robin, Northern Pipefish. Usually 1 per tow.

^{***} Spiny Dogfish retained ahead of grate counted as catch Sea Robin, Northern Pipefish. Usually 1 per tow.

^{***} Spiny Dogfish retained ahead of grate counted as catch

Figure 1. Length Frequency of Selected Species from 30" Raised Footrope with Roller Frame Net (F/V North Star) and from Footrope Down on 10" Roller Frame as Control (F/V Tenacious). Both have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

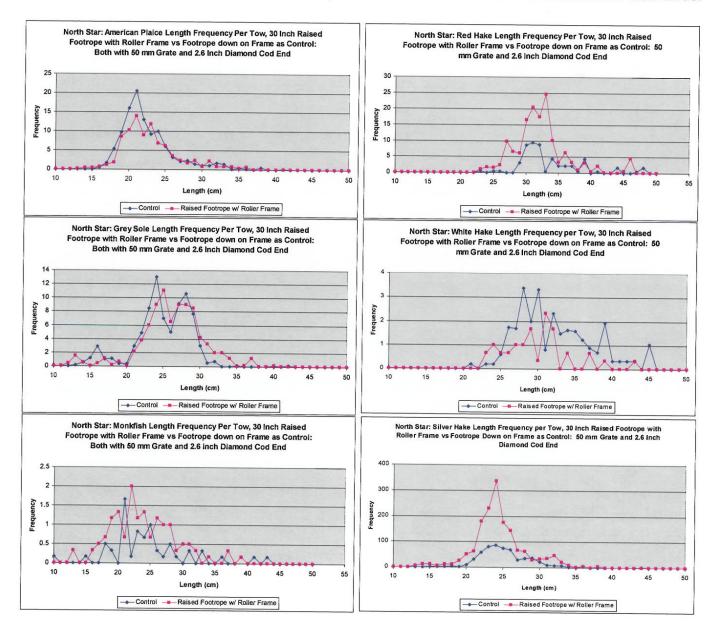


Figure 2. Percent Length Frequency of Selected Species from 30" Raised Footrope with Roller Frame Net (F/V North Star) and from Footrope Down on 10" Roller Frame as Control (F/V Tenacious). Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Cod Ends.

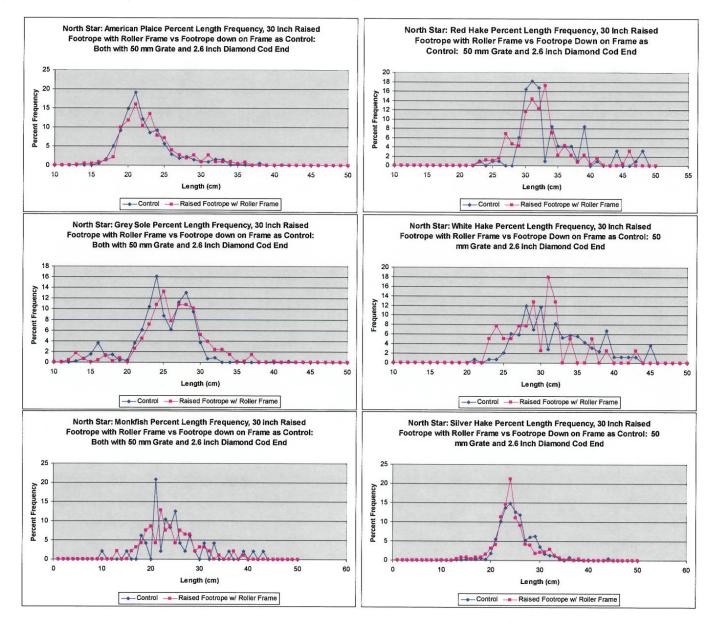


Figure 3. Length Frequency of Selected Species from 30" Raised Footrope with Roller Frame Net (F/V Tenacious) and from Footrope Down on 10" Roller Frame as Control (F/V North Star).

Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

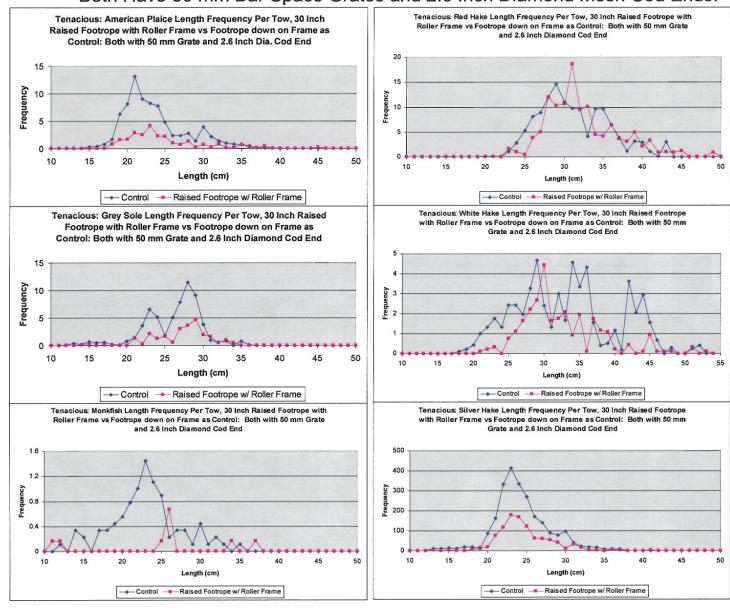


Figure 4. Percent Length Frequency of Selected Species from 30" Raised Footrope with Roller Frame Net (F/V Tenacious) and from Footrope Down on 10" Roller Frame as Control (F/V North Star). Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

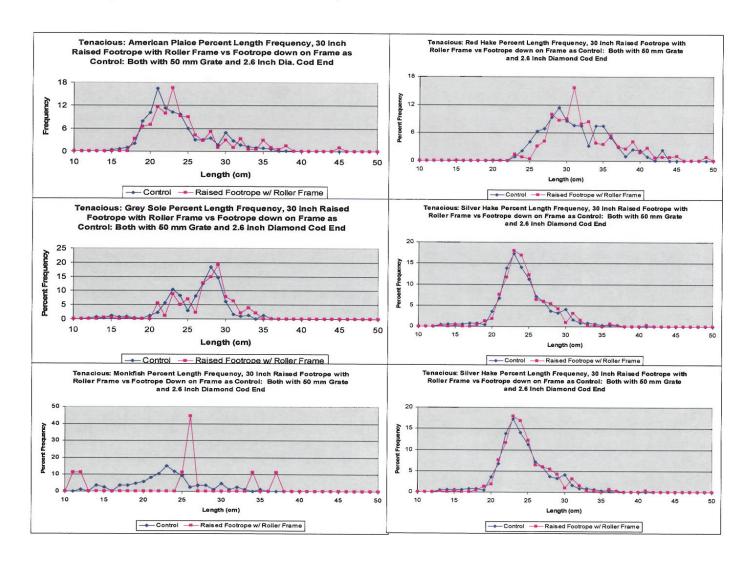


Figure 5. Length Frequency of Selected Species from 30" Raised Footrope with No Roller Frame Net (F/V North Star) and From Footrope Down on 10" Roller Frame and Control (F/V Tenacious). Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Cod Ends.

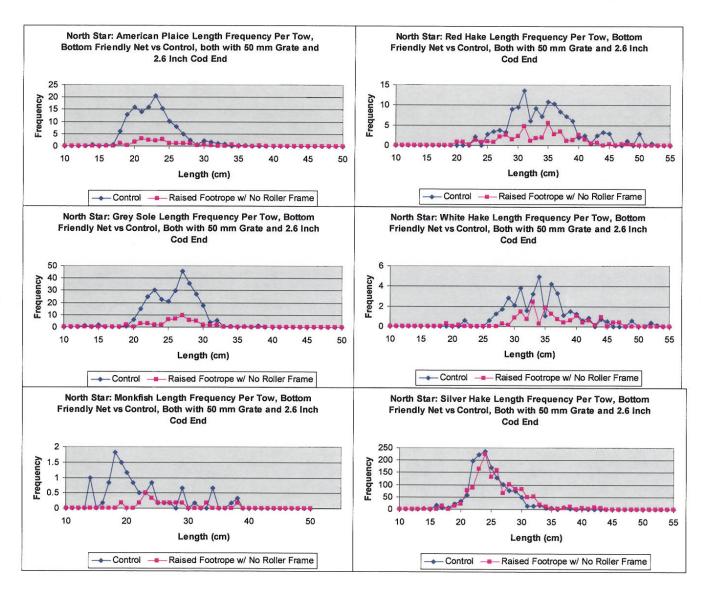


Figure 6. Permit Length Frequency of Selected Species from 30" Raised Footrope with No Roller Frame Net (F/V North Star) and from Footrope Down on 10" Roller Frame as Control (F/V Tenacious). Both Have 50mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

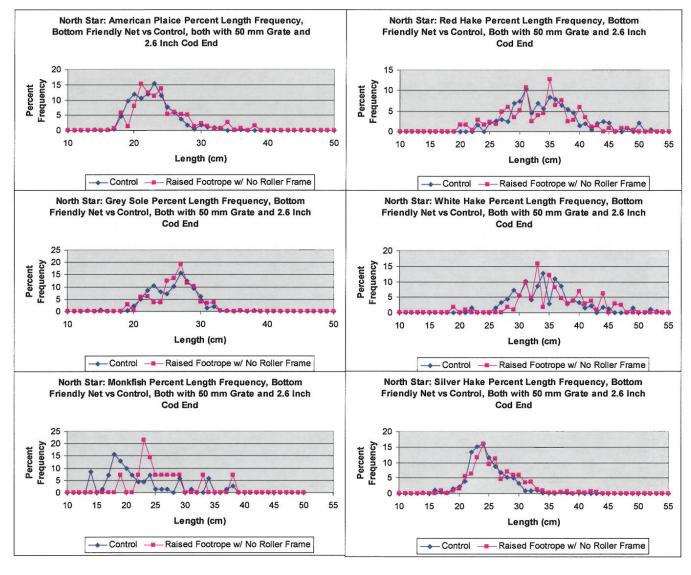


Figure 7. Length Frequency of Selected Species from 30" Raised Footrope with No Roller Frame Net (F/V Tenacious) and from Footrope Down on 10" Roller Frame as Control (F/V North Star). Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

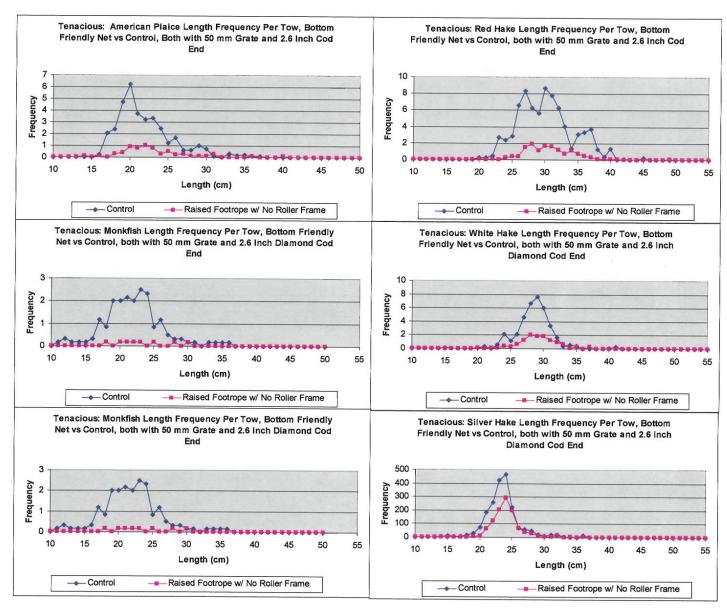


Figure 8. Percent Length Frequency of Selected Species from 30" Raised Footrope with No Roller Frame Net (F/v Tenacious) and from Footrope Down on 10" Roller Frame as Control (F/V North Star). Both Have 50 mm Bar Space Grates and 2.6 Inch Diamond Mesh Cod Ends.

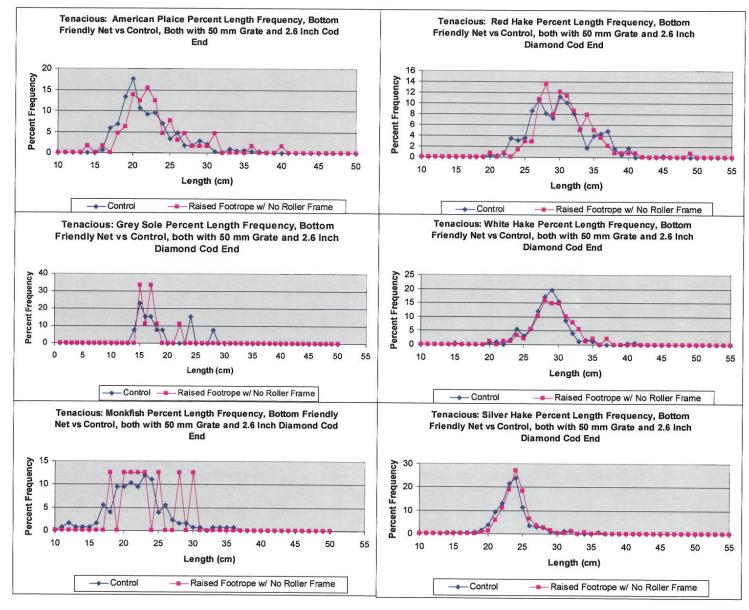


Figure 9. Length Frequency of Selected Species from 2.6 Inch Diamond Mesh and 2.2 Inch Square Mesh Cod Ends. Eight Paired Tows Between F/V Tenacious and F/V North Star Using A Variety of Raised Footrope with and without a Roller Frame and a Footrope Down on the Roller Frame.

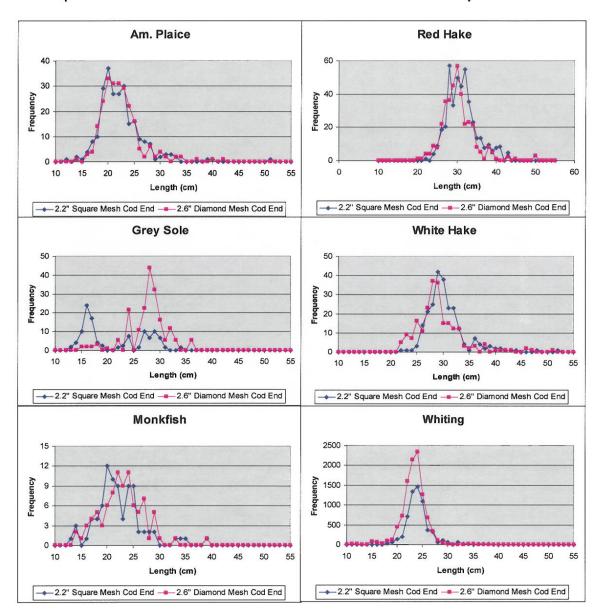


Fig. 10. Whiting Length Frequency from 50 mm Grate,
Raised Footrope Sweepless Trawl:
21 Tows, F/V Tenacious, Coastal Maine, Fall, 2002.

Fig. 11. Whiting Length Frequency from 50mm **Grate, Raised Footrope Sweepless Trawl: 36** Tows, F/V North Star, Fall, 2002, Coastal Maine. Frequency Length (cm)

Fig. 12. Percent LF Whiting, Fall, 2003: Grate Raised
Footrope Sweepless Trawl Trials Maine Coastal
Waters: 71 tows.

30
20
10
5
15
25
35
45
Length (cm)

North Star (43 tows) — Tenacious (28 tows)

Fig. 13. Regulated Species Length Frequency from 50mm Grate, Raised Footrope Sweepless Trawl: 36 Tows, F/V North Star, Fall, 2002, Coastal Maine. 140 Frequency Total Catch, 36 Tows 120 100 80 60 40 20 10 0 20 30 40 50 60 Length (cm) → White Hake (184) - Redfish (486) — Cod (1) --- Haddock (1) → Amer. Plaice (237) → Gray Sole (122) — WP WF YT (0)

Fig. 14. Frequency of Bycatch of Regulated **Species in Year 2002 Tows with Grate** Raised Footrope Net. 61 Tows Completed. 8 Frequency of Tows 0 0 20 10 30 40 50 60 % Bycatch Regulated Species → 80% of Tows < 5% Bycatch

Fig. 15. Whiting Grate Raised Footrope Sweepless Trawl, 36 Tows, F/V North Star, Fall, 2002, Coastal Maine: Percent Catch of Individual Regulated Species per Tow.

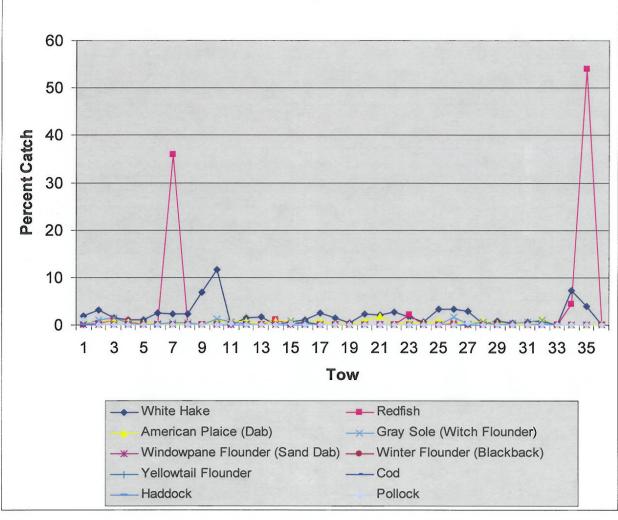


Fig. 16. Percent Bycatch Regulated Species Per Tow by Depth: September, 02 - January, 03 Whiting Grate Raised Footrope Sweepless Trawl 70.00 60.00 50.00 40.00 Percent 30.00 20.00 10.00 0.00 40 50 60 90 70 80 100 Depth (Fathoms)

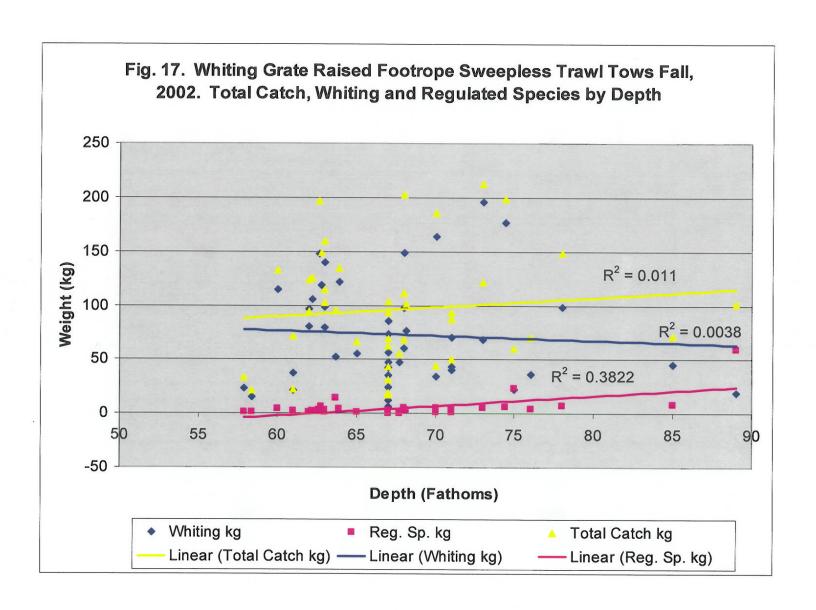


Fig. 18. Whiting Grate Raised Footrope Sweepless Trawl, Fall 2002: Percent Bycatch Reg Sp. Relative to Total Catch 70.00 60.00 % Bycatch Reg Species 50.00 40.00 30.00 20.00 $R^2 = 0.0146$ 10.00 0.00 0.0 50.0 100.0 150.0 200.0 250.0 Total Catch (kg)

Fig. 19. Percent by Wt. Reg. Sp. by Season: Grate Raised Footrope Whiting Tows: Sept 02 -Jan 03 70.00 60.00 50.00 40.00 30.00 20.00 10.00 0.00 9/1/200 9/21/20 10/11/2 10/31/2 11/20/2 12/10/2 12/30/2 1/19/20 2 02 002 002 002 002 002 03 **Time**

Fig. 20. Whiting Length Frequency: 3" Cod End vs 2.5" Cod End. 16 Paired Tows, Cod End Pairings **Evenly Split between Two Vessels.** Frequency Length (cm) → 3" Codend — 2.5" Codend